

CB

HORIZONS

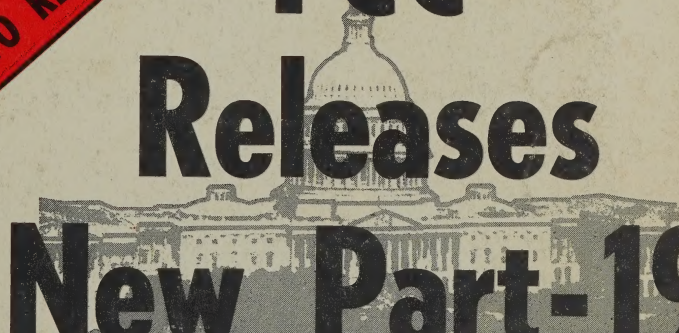
January 1963
50 CENTS
(\$.55 in Canada)

First CB Sideband Rig Announced



IN THIS ISSUE--TWO REVOLUTIONARY DEVELOPMENTS FOR CB!

FCC Releases New Part-19



TWO-WAY RADIO FOR BUSINESS AND PLEASURE

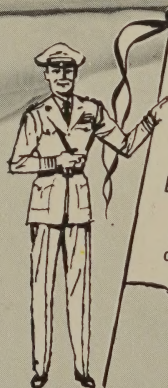
SPECIAL RUSH ISSUE!

COMPLETE PART 19
PROPOSAL INSIDE



General
the most wanted

ONLY GENERAL MC5 HAS SIDEBAND NOW!
See It At Your General Dealer TODAY!



WIN!
FREE CB
EQUIPMENT
EVERY MONTH!

See insert
card in back
of this issue.



Watch this space for
the name of monthly
winner in General's
CB Drawing!

GENERAL

MC5

Citizens Band Transceiver for 1963!

Buy the finest and save...eliminate the need to "trade-up"! The General MC5 offers all the versatility and performance demanded to meet the challenge of outstanding citizens band communications. Built-in features, unparallel talk power, highest noise limiting ever achieved, unsurpassed stability are a few of the key reasons for seeing the MC5 FIRST! Fifteen solid pounds of power, beauty and reliability make the MC5 the most sought after set for 1963!

3.25 watts minimum output. • High level modulation transformer for unparalleled talk power. • New Zener Diode shunt noise-clamp and series gated limiter circuit for highest noise limiting ever achieved. • New ultra-low drift oscillators for unsurpassed stability. • New Hi-level Tone-Signal. • Illuminated "S" Meter. • 6V, 12V, 115V operation. • 15 watt construction. • Net Price including microphone and crystal...\$199.95. Optional accessories available. 6 Volt or 12 Volt cord, each \$4.95. Crystal T or R, each \$2.95. 90 day warranty. F.O.B. Burbank, California.

Under present rules part 19.32 the FCC does not provide for more than five (5) watt input in the Citizens Radio Service (26.965-27.225 MC Band)

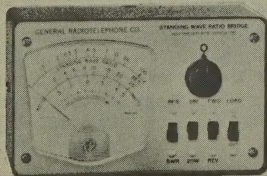
FREE! Send for 1963 catalog by mailing the handy insert card in the back of this issue.

Left: General Fieldmaster

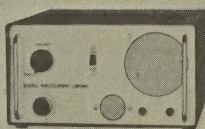
Dependable, low cost, two-way radio. 9 transistors, 1 diode and 2 plug-in crystals. Hammett tone finish, and solid Aluminum case. Built-in whip antenna, 51" extended. Jack for earphone. Battery: Uses one 9 volt, E 9 battery. Size 6 1/2 x 3 1/4 x 1 1/2. Weight: 12 oz. approx. Complete with crystals, leather case, earphone in leather case, batteries, "ready to operate" \$39.95 each or \$75.00 per pair. 90 day service and parts warranty. F.O.B. Burbank, California

Below: General 615 Multi Function Bridge

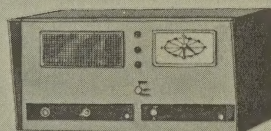
The only single precision instrument that measures True Power, Standing Wave Ratio, Relative Field Strength, with built-in dummy load. Net Price \$39.95 F.O.B. Burbank, California



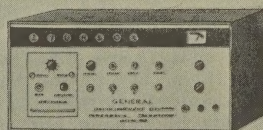
General Commands the Communications Field with a complete CB and FM line:



FM-60. Range 150-174 MC. FM transceiver 30 watts input—16 watts out. FCC type accepted.



FM-500. Range 150-174 MC. Linear amplifier—FCC type accepted. 6 watts drive—180 watts input.



CG-1 Electronic Counter-Generator. Reads or generates signals from DC to 500 MC. Accuracy exceeds FCC requirements.

RADIOTELEPHONE COMPANY

3501 West Burbank Boulevard, Burbank, California



OZZIE'S MAIL BOX

Ozzie—

Wha' happen? In your October '62 issue, Page 8, you gave us this swingin' scoop on the 7788 pre-amp. But—no schematic! The circuit is hotter than you think it is. I would estimate about 90% of those who build this thing are going to have a lovely power oscillator. So how about sending me a schematic! Your generosity in this matter will also get a half dozen guys off my back who think electronics is black magic and everytime they come up with a question about their CB rigs they bug me about it.

Charles L. "All Channel" Suggs
San Diego, California

"All Channel":

Horizons' resident engineer Russ Miller has schematic diagrams available for any who need them in constructing the 7788 pre-amp. Approximately 50 have been mailed out to date. Keep your filaments hot.

Ozzie—

Just arrived for Air Force Assignment here in Goose Bay, Labrador. Can I use my 12W number while here (still make my home in California) or must I apply for a Canadian license? Also find enclosed my address change. Don't want to miss CBH. . . it will be good company during these cold winter nights. May even work a little skip now and then.

John Nagle, 12W5084
Goose Bay, Labrador

John:

Friend—you are on a spot. You cannot use your 12W call in Labrador because the (Canadian) Department of Transport (DOT) is in charge of issuing Labrador calls. Some U.S. 'hams' have VO1 ham calls there, but to the best of our knowledge this reciprocal agreement that allows U.S. 'ham' activity in Canada has never been extended to CB. Have fun LISTENING to skip!

Ozzie—

I was very much enamored by the picture of Jamie Jones appearing in your November issue (Citifone Review). A few questions present themselves however. Is Miss Jones (and I sincerely hope it is MISS Jones) an Editorial Assistant or is she Production Coordinator. Needless to say a personal answer from Miss Jones would be very much appreciated since a personal contact from such as she is something I look forward to. It is definitely hoped that Miss Jones

has not had the good fortune to become matrimonially involved, yet!

Thomas S. Brown, 2Q7171
Pleasantville, N.Y.

Dear Lover Boy:

Miss Jones reports she is a MISS and doesn't miss being a Mrs. . . . YET! She also notes that she works very hard for Horizons 12 hours a day, six days a week as Production Coordinator and simply doesn't have time to answer fan letters. YET!

Dear Oz—

In the November issue of CBH, your column, an XYL in Dallas wrote about the Makino Noise Limiter circuit which she said really works to cut out ignition noise from nearby cars and trucks. How can I get a copy of this circuit?

Ronald D. Clark, KDB6230
Greenville, S.C.

Ron:

The Makino Noise Limiter was described on page 16 of the July 1962 issue of CBH. The same circuit is described in greater detail in Chapter 5—page 8 of the brand new CB Radio Mobile Handbook, available from Horizons and its dealers. It should cure all of your noise ills.

Ozzie—

In my November issue of CBH I was surprised to read the story in CB Datebook about the GI and the sick child. The more I read the story the more it sounded like one my Dad (Don Nix, 6Q4803) told me a while back. So I got on the radio and checked it with him. Sure enough, every detail checked out. My Dad even received a postcard from the GI-CB'er whose child was suspected of having contacted meningitis. The postcard reads as follows:

"Hi Don—I was the one they were trying to get in touch with. Thanks for your help and assistance. They located us in Houston, Texas and gave us the needed medicine. Our baby girl did not contact the disease and she is just fine. 73-Perry Rainey, Jr.
12Q1792
Marysville, California

I know there are many hundreds of others who would like to know how this turned out.

Bill Nix, 6W3581
Detroit, Alabama

Dear Ozzie—

In much less violent terms I agree with CB'er Paul Crowell's letter printed in your October issue. Single sideband is, for my money, too technical and too tricky for Class D CB operation. In your answer to CB'er Crowell's letter you state that the U.S. Airforce has switched to sideband operation. Please bear in mind that these sets are being used by trained operators and that the radios are constantly serviced by highly skilled technicians. NOT FOR ME! ! I would prefer to see things left as they are now, rather than get into SSB. Keep up the good work.

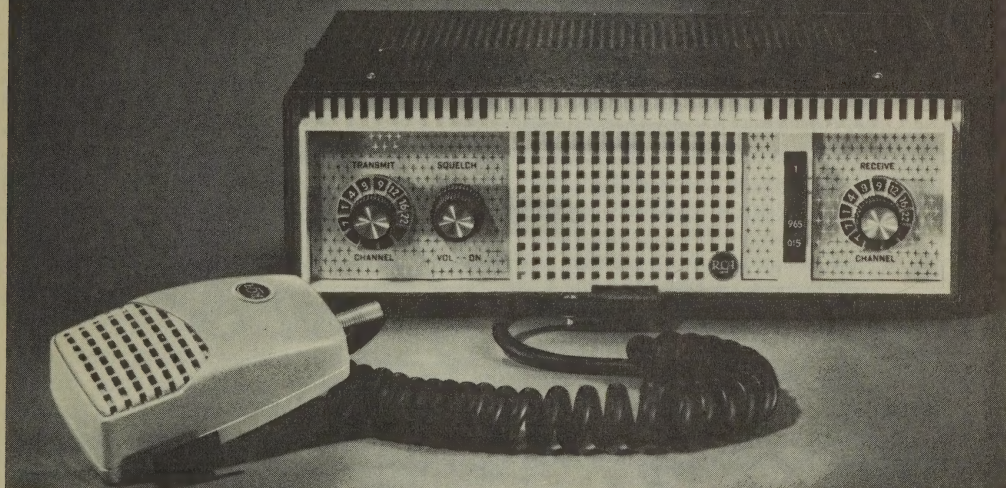
Gil Long, 1Q6002

Andover, New Hampshire

Gil:

Progress in almost any field means more complex equipment performing more complicated functions. Henry Ford had a good thing with his model 'A' but that hasn't stopped the Ford Motor Company (and others) from developing dual overhead cam V8's, disc brakes, and individual suspension for each wheel.

The new RCA MARK VIII 27-Mc 2-WAY RADIO



More Features • Improved Performance • AT A LOWER PRICE

Here is THE outstanding bargain today in a 2-way Citizens' Band radio: THE NEW RCA MARK VIII. Compact, dependable, simple to operate, it outperforms and offers more features than even the famous RCA Mark VII.

Look what this remarkable new unit offers you:

- 9 crystal-controlled transmit and receive channels
- Tunable receiver for reception of 23 C-B channels; dial marked in both channel numbers and frequency
- Exceptionally good voice reproduction—high intelligibility
- Maximum allowable transmitter input of 5 watts*—nominal output of 3 watts or more
- Highly selective superheterodyne receiver with one rf and two if amplifier stages
- Operates from standard 117-volt AC; separate DC power supply (optional) for mobile installations (you don't pay for unnecessary power supplies)
- Electronic switching—no relay noise or chatter
- Illuminated "working channel" feature
- Light and compact—only 3½ inches high, weighs only 8 pounds with mike; fits easily under the dashboard of even a compact car
- Improved Automatic Noise Limiter to reduce effects of ignition and similar interference

plus many more features to increase its usefulness and efficiency.

The new low Mark VIII price \$149⁵⁰**
puts 2-way radio convenience within reach of everyone

GET THE FULL STORY; FILL OUT AND SEND IN THE COUPON BELOW

RCA Electron Tube Division, Commercial Engineering, Dept. L-132-R
415 South Fifth Street, Harrison, New Jersey

Please! Rush more information on the new RCA Mark VIII 2-way Citizens' Band Radio.

Name

Address

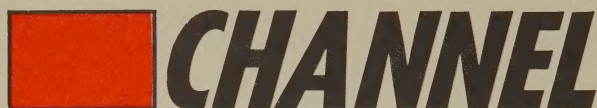
City Zone State

*Maximum plate input power to final radio-frequency amplifier stages as defined by FCC regulations

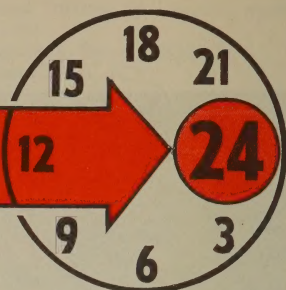
**Optional list price



The Most Trusted Name in Electronics



CHANNEL



BOB COOPER, JR.—KEG2607

OUT IN THE OPEN

The worrying is all over now. The cards are on the table and the bluff has been called. Only there was no bluff. The FCC has proved itself a worthy 'opponent' in the dead-serious game of operating privileges for the Class D radio service.

We've talked about, had open conjecture about and even prophesied about it. We've heard rumors until we thought there was no truth. Finally, on the afternoon of November 14th we got the word from our Washington office.

"The rules are downstairs" came the word. "They're in the repro (reproduction) room now. Here's what they say."

And our Washington Bureau Chief went on to relay the facts behind this month's number one story. The brand new *Proposed Rule Changes* for Part 19.

On November 15th, CB Horizons mailed 3,500 copies of one page 'brief' on the new rules to every CB club, CB dealer and CB manufacturer we knew. The girls in our repro room worked late that night. CBH editorial staff members have been working late ever since digesting the massive pile of documents that the FCC assembled in support of its proposed rule making.

The actual rule making proposal is found in almost full text starting on page 17 of this issue. Some of our staff members have begun *preliminary* interpretation of the sections in the proposal and these early opinions by CBH's learned staff appear with the article, as footnotes at the bottom of each page.

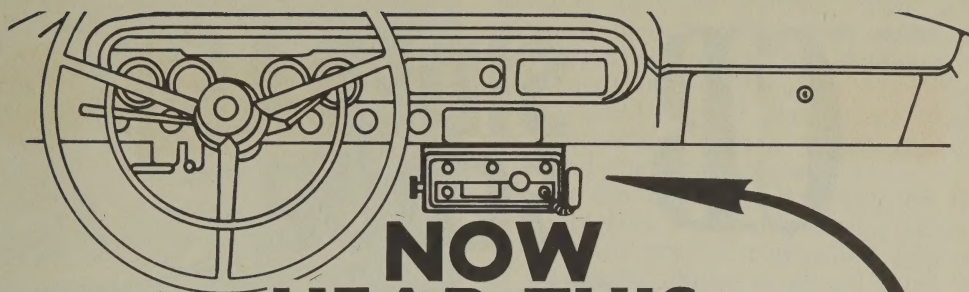
Let every CB'er and prospective CB'er reading these proposed rule changes keep in mind, as we read, that this is a *proposal* to change *existing* rules. If the entire proposal is adopted by the FCC, it would probably go into effect (thereby superseding the present Part 19 provisions) around May 1-15 of 1963.

Let us also keep in mind that we, as the present *and* future licensees in the Citizens Radio Service, are the future *users* of these rules and regulations. If we do not agree with one or more of the proposals, it is our legal right (and moral duty) to file our *comments* with the Commission. Information on how you should file comments can be found at the end of the report beginning on page 17.

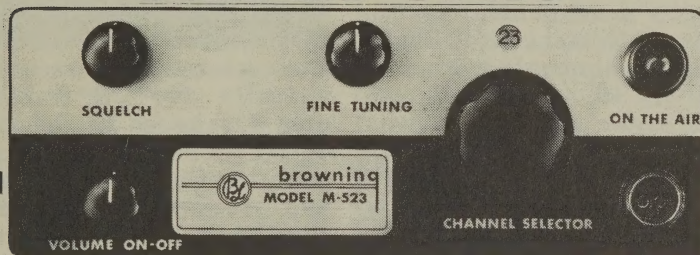
Let there be this warning, however. The Commission *itself* will *not* be influenced by 500,000 post cards which say (in effect) "drop dead Ivan Loucks" or "Three cheers Commission." They will be influenced by whatever reasonable and prudent arguments you can bring to their attention as to why a section or paragraph would inflict undue hardships on the existing and future users of CB Class D Radio. They *may* also be influenced by weight or pressure brought to bear through your Senatorial or Representative members in Congress. After all the Commission has to have funds to operate just like anyone else, and it is still Congress which appropriates these funds.

So think out *your* replies carefully, then file them before January 15th. File as individuals, businessmen and clubs. File as many times and as often as you wish. But file. Before January 15th.

KEG2607



NOW HEAR THIS:



... Browning Brings You 23-Channel Operation In A Mobile CB Unit.

Now, you can own a mighty mobile rig that lets you operate on any of 23 channels at the flick of a channel selector switch.

Model M-523 is designed and manufactured by Browning to give you big base station performance in a mobile unit. Ideal for car, boat, or other vehicles, Model M-523 has a transistorized DC power supply that can be mounted in any location, plus many other Browning features.

This compact powerhouse (8" x 3" x 9" deep) is easy to mount and leaves plenty of leg room. Contact your local authorized service center or write for information. Also available is Browning Model M-506, mobile transceiver for 6-channel operation.

OVERALL FEATURES

- Small size (8" x 3" x 9" deep) makes for easy mounting and more knee room.
- Rear lighted channel indicator.
- Transmit and receive channel selected simultaneously with flick of channel selector switch.
- Modern styling matches interior of all cars and boats.
- Price includes 12-volt power supply, speaker and microphone.
- Transistorized DC power sup-

ply providing high efficiency and reduced maintenance can be mounted in any location.

TRANSMITTER SPECIFICATIONS

- Plate power input: 5 watts.
- Power output to antenna: 3.5 watts.
- Modulation — 100%, peak limited, plate modulation.
- Harmonic suppression: Better than 50 db down through use of TVI Trap.
- Frequency stability: .005% per FCC specifications.

RECEIVER SPECIFICATIONS

- Sensitivity: 0.4 UV for 10 db signal to noise ratio.
- Selectivity: 5 KC @ 6 db; adjacent channel 60 db down.
- Frequency stability: .005%.

ACCESSORIES

- AC power supply — Model AC-115.
- S-Meter with illuminated dial — Model DB-40.
- Rear deck speaker kit — Model SK-1.

Browning Service Center Franchises Available—
Mail Coupon →

Send for new 16-page Browning CB Catalog. For free copy, write Dept. H 100 Union Avenue, Laconia, New Hampshire.



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BROWNING LABORATORIES, INC.

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CB SIDEBAND SCOOP

— A CB Horizons Extra —

This month's cover portrays a pair of startling new developments for the world of Class D Citizens Band Radio. The first of these, announced proposed changes in Part 19, is detailed elsewhere in this issue.

The second unfolds here. Sideband. Sideband for CB. Here at last, and a promise of much more to come as the new year gets underway.

The first manufacturer to break the announcement barrier is General Radiotelephone of Burbank, California. General made a mailing to their dealers and distributors Saturday, November 17th. The California firm began shipping the first section of their new SB units right after Thanksgiving.

CB Horizons had one of the very first SB *Adapters* in action Thanksgiving Day and here is our report.

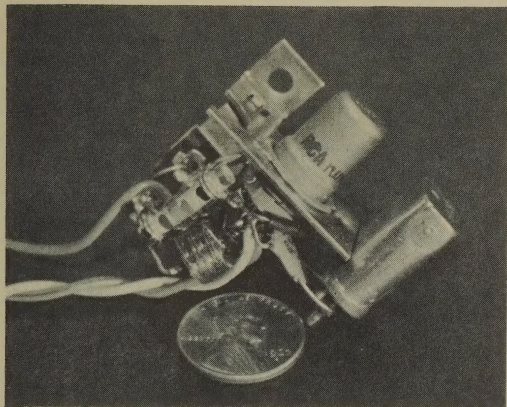
In the next few months the CB world will be treated to a number of new rigs, many of them sideband in configuration. What sideband is, and what it isn't, was covered in considerable detail in the October, 1962 issue of CB Horizons. We recommend that you go back and read over *Introduction to Sideband for the CB'er* in that issue at this time.

Each manufacturer in the coming months will have his own approach to sideband transmission and reception. Only field trials and tests will determine which is going to be best for your particular application. We should note that the type of unit that does the best job for you may not be the best type of unit for someone else's requirements.

General's approach to sideband is *double sideband*. General is first an-

nouncing a sideband *receiver* adapter unit which, although designed primarily to attach into existing MC3, 4, or 5 model transceivers, will wire into virtually any CB transceiver which uses 452 kc as an i.f. amplifier frequency. The sideband receiver adapter consists of a 452.1 kc oscillator which will *beat* with the incoming sideband signal you are trying to receive. The 452.1 kc oscillator provides the *carrier* to the *carrierless* incoming sideband signal. The signal from the 452.1 kc oscillator *and* the incoming CB signal (already converted down to the i.f. range) then go into the diode detector circuit used in the General where the signal is detected and turned into audio, which you hear from your speaker.

The SB Adapter wires into your existing transceiver and part of the wiring change turns the 'local-distant' switch into an AM-Sideband switch. On the AM position your MC3, 4, or 5 transceiver (or any transceiver the unit is wired into) acts like any normal AM receiver. In the sideband position the switch feeds B-plus voltage to the 6CW4 nuvistor 452.1 kc oscillator and turns the squelch control on your transceiver into an rf gain control. On sideband you *need* a control over the signal level fed into the receiver detector to prevent the receiver from over-loading. An overloading detector on *sideband* simply will not function to give you clear reproduction of the audio. Thus with the squelch turned into an rf gain control, you can control the amount of signal fed to the detector by controlling the amount of incoming sideband signal fed through the receiver.



General's new sideband receiver adapter is hardly bigger than the end of your thumb.

Without a sideband adapter wired into your transceiver a sideband transmitter will be unintelligible. You simply cannot receive a properly adjusted sideband signal on an AM receiver.

In approximately 45 days General will make deliveries on their new sideband *transmitter* adapter. The transmitter adapter will consist of a separate unit which you will feed the output of your existing transmitter into. Inside the transmitter adapter the normal AM signal from your transceiver will be turned into a *double* sideband signal. While we will cover this unit in greater detail when it is actually available, we will note here that the transmitter adapter will consist of a 'balanced modulator circuit followed by a linear amplifier.' General notes the *Sideband Adapter Transmission Unit* will sell for around \$79.75. This price is tentative at the present time, however.

INSTALLING THE S-B RECEIVER ADAPTER

The S-B receiver adapter from General nets for \$19.95. The sub-miniature chassis of the adapter occupies less than 2 cubic inches of space. It fits any existing MC3, 4, or 5 units without drilling holes or chassis cutting. As pointed out, the S-B unit requires some modification wiring of the General unit. Since these changes are covered in the instruction manual, we will not detail them here, except to note that the S-B unit may be installed on other transceiver brands which have an ad-

justable squelch control. You will probably have to add a dpdt switch in other units to switch from sideband to AM reception since no units other than the General have a convenient local-distant receive switch which can be modified for this purpose.

With the unit installed, set the receive selector to variable tuning. (Don't try to use crystal controlled receive as single or double sideband must be tuned *much more accurately* than crystal receive tolerances permit.) Do your tuning—looking for a SB signal with the SB-AM switch in the AM position. Listen for the typical *gorbled* sound that signifies a sideband signal being received on an AM receiver. After tuning into a sideband signal switch to the SB position with your front panel switch. The S meter will move up to a fixed position, regardless of the signal present. This is normal. Now back down on the rf gain control (formerly the squelch) until the S meter just begins to move with the sideband station talking. Now fine-tune the variable tuning until the garbled speech becomes clear and intelligible. *Note:* If the rf gain control is set too high the signal will remain garbled and be hard to understand.

You will find an *optimum* combination position with both the rf gain control and the variable tuning where the sideband signal becomes clear and distinct.

We should note here that you must allow your transceiver to warm up (a few minutes with most units) before you attempt to tune sideband with it. A cold receiver will drift slightly while warming up, and this will de-tune the sideband signal causing it to become garbled.

General's S-B Receiver Adapter will receive either single or double sideband signals. When using it with General's double-sideband transmitter adapter you will soon discover that you can tune in either the upper or lower sideband. In other words, you will have *two* chances to find the signal. With a double sideband adapter working properly, both should sound about the same. However, if you have interference on the channel from an

ORDER YOUR 1963 CB CALL BOOK NOW!

Time's running out! The 1963 Citizens Band Call-Book Directory will soon be out. More than 9,000 CB'ers have already placed orders for their own copies. And here's why!

- ★ **Every CB'er licensed in 1962 listed.** All Call-Areas from KBA to KJB. Nearly 130,000 listings in all!
- ★ **Complete guide to over 3,000 local town and city calling and monitoring channels.** By state and town. Alphabetical.
- ★ **Complete Guide to nearly 500 CB dealers.**
- ★ **Complete guide to approximately 1,000 CB clubs.**
- ★ **Complete Part 19 (Revised) for 1963**

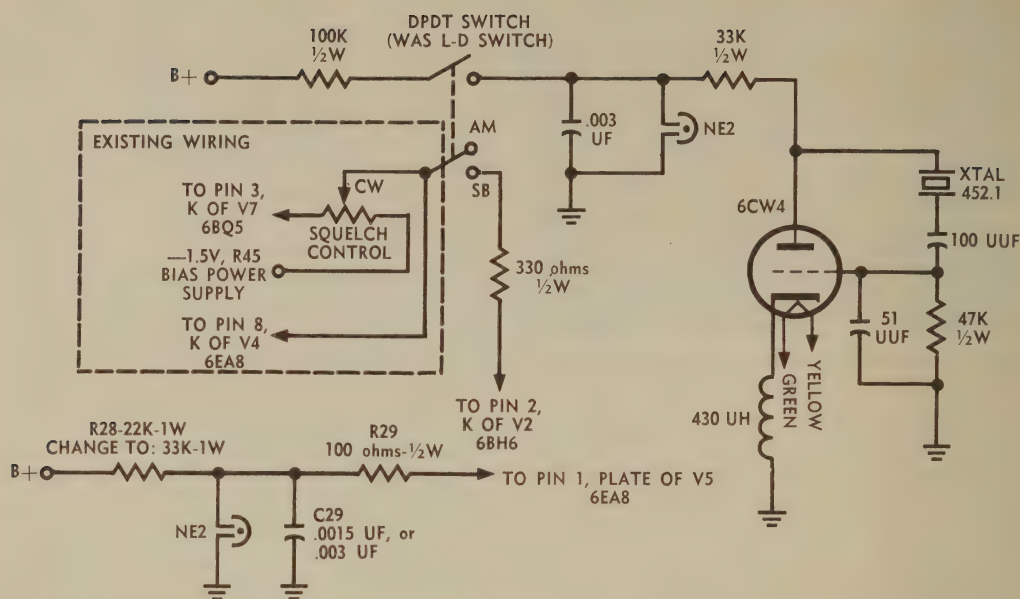
This year's book will feature two columns of listings per page . . . **larger more readable listings!** Approximately 350 pages!

If you were licensed in 1962, or if you want and need a complete listing of CB'ers licensed in 1962 . . . **YOU NEED THIS BOOK!**

Price: \$4.50 each.

Instructions: Turn this card over and use the **middle form** (form "B") to order your 1963 CB Call-Book. With more than 9,000 individual orders already, **we cannot guarantee prompt delivery unless you pre-order your copy!**

**TURN THIS CARD OVER—
ORDER TODAY!**



Schematic of the S-B Adapter for the General MC3, 4 and 5 series transceivers (see text). The 6CW4 injection oscillator uses a precision ground 452.1 kc crystal and is voltage controlled itself with the NE-2 bulb shown in the B plus line. The additional wiring shown at bottom left adds an NE-2 bulb in the B plus to the receiver's local oscillator. This improves the tunable receiver stability considerably, which is considered essential to trouble free SB reception. With the NE-2's in the circuit, the DC voltage in the receiver line can change as much as 20 volts and the sideband signal remains unchanged by oscillator variations.

AM signal, you can probably cut down the interference on one or the other sideband considerably and actually copy the sideband signal (even though it may be weaker than the AM signal) right through the AM signal from the conventional transceiver.

TUNING TIPS

The rf gain control should be set as low as possible (as far counter clockwise as possible) to produce clear understandable signal levels. Do *not* attempt to increase the volume of the sideband signal by increasing the rf gain control. Always use the volume control.

You will quickly learn that you get best-noise-free reception on sideband by using the *volume* control to keep the sideband signal at an enjoyable listening level, and keeping the rf gain control as far down (counter clockwise) as possible. With the rf gain

control turned way down, or just high enough to produce a *good copy* signal on sideband, background hiss, noise and static will *not* be heard unless the sideband signal is very weak.

While it is possible to work sideband and AM on the same channel, it is highly recommended that you work on a channel not in heavy use in your area for your sideband work.

Initially sideband will be little understood (!) and not very popular with those licensees *still* using AM units. The FCC has already stated that it is *all in favor* of sideband *provided* that users of sideband do not use it to create interference to other CB users. This means early day sideband pioneers have on their shoulders a responsibility to get off *by themselves* where their garbled monkey-chatter will not interfere with regular AM communications. It's in the best interest of all concerned!

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**TURN THIS CARD OVER—
ORDER TODAY!**

**USE MIDDLE CARD (form B) TO ORDER 1963
CB CALL-BOOK PRIOR TO DECEMBER 31st**

**FORM A
CB MOBILE HANDBOOK ORDER FORM**

FORM A

FORM A

... Yes, enclosed is my check/money order for \$2.95. Please rush me a copy of the Brand New CB Mobile Handbook, all 140 pages!

Name _____ CB Call _____

Address _____

Town/City _____ Zone _____ State _____

Airmail today to:

CB Mobile Handbook

P. O. Box 1557

Oklahoma City 1, Oklahoma

(Tear off and airmail)

**FORM B
1963 CB CALL-BOOK ORDER FORM**

FORM B

FORM B

... Yes, enclosed is my check or money order for \$4.00, for a copy of the 1963 CB Call-Book. Rush me my copy as soon as the ink dries and the presses stop rolling in January! I understand that this special price-offer expires December 31st and that after that date all 1963 Call-Books are \$4.50 each.

Name _____ CB Call _____

Address _____

Town/City _____ Zone _____ State _____

Airmail today to:

1963 CB Call-Book

P. O. Box 1557

Oklahoma City 1, Oklahoma

(Tear off and airmail)

**FORM C
14 MONTHS OF CB HORIZONS—ORDER FORM**

FORM C

FORM C

... Yes, enter my 14 month subscription to CB Horizons Magazine starting with the very next issue. I am enclosing my check/money order for \$5.00.

... This is a Christmas gift subscription. Please send a card listing the giver as _____

Name _____ CB Call _____

Address _____

Town/City _____ Zone _____ State _____

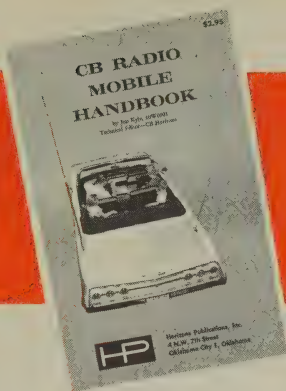
Airmail today to:

CB Horizons Magazine

P. O. Box 1557

Oklahoma City 1, Oklahoma

USE HANDY
MAIL ORDER
CARD AT LEFT



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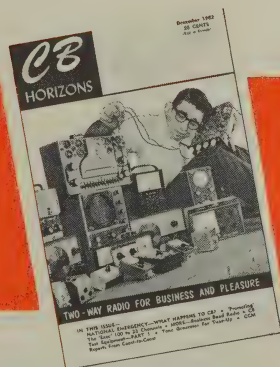
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PART 19 REVISIONS

On November 16th the Federal Communications Commission officially released Docket number 14843. This Docket, the long awaited proposed rule making which would substantially modify the provisions of Part 19 were it adopted, is of such importance to every present and future user of Class D CB radio that CB Horizons is devoting a very large portion of our editorial section to its coverage this month.

The Commission has invited *all* interested parties, clubs, groups or businesses to file comments on either specific sections of the proposed rule making, or on the rule making proposal in whole. Such filings must be made as set forth in Section 1.213 of the Commission's rules (see end of this report for sample form). Comments must be filed with the Commission on or before January 15th, 1963. Reply comments (i.e. comments which are in reply to other comments) are due in by January 31, 1963.

However, CB Horizons feels that because a very large number of initial comments will be filed, and because these comments must be reproduced and circulated to all other parties who file comments, there is an excellent possibility that the January 31 "reply comment filing date" will be extended.

On the bottom of each page, with the actual paragraphs of the proposed Part 19, CB Horizons staff members have prepared interpretive comments on some of the sections quoted.

The new proposal covers all phases of the Citizens Radio Service, including Classes A, B, C and D. In order to keep confusion at a minimum, we have elim-

inated all data which directly pertains to Classes A, B and C.

CB Horizons asks that when you file your comments with the Commission that you also mail a copy along to our Editorial offices. This will help us to evaluate the trend of the comments filed and bring all readers as factual a report on these trends as early as possible.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

S
FCC 62-1174
26948

In the Matter of	) DOCKET NO.
	) 14843
Amendment of Part 19, Citizens	) RM - 252
Radio Service, to revise Subpart	) RM - 311
D, Station Operating Require-	) RM - 312
ments, and to make other	) RM - 342
changes	) RM - 347

NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above-entitled matter.
2. Since the creation of the new Class D category of station, in 1958, the Citizens Radio Service has grown from slightly over 40,000 station licensees to approximately 350,000. With this tremendous and unprecedented growth it would be expected that some rule violations would occur. However, monitoring, inspections and investigations by the Commission as well as numerous letters from licensees complaining of unnecessary interference to their operations indicate that misuse of citizens radio station operating privileges is so prevalent in some areas as to threaten the continued usefulness of the service.
3. Each of the Safety and Special Radio Services was created by the Commission to fulfill a definite communications requirement. For example, the Police Radio Service was created to provide communication facilities for use in the conduct of police functions, and the communications in that service are restricted to those necessary for that purpose. The Citizens Radio Service was intended to provide for necessary short-distance radio-communications in connection with the

business or personal activities of the licensee. While the permissible communications in the Citizens Radio Service are considerably broader in scope than in most of the other Safety and Special Radio Services, there has been no intention to permit the operation of radio solely for the amusement of the operator or as a hobby in and of itself. Such communications or uses have always been prohibited in the Citizens Radio Service as well as in all of the other Safety and Special Radio Services with the exception of the Amateur Radio Service where they have been provided for.

4. It seems apparent that any widespread abuse of station operating privileges by licensees in a service as large as the Citizens Radio Service is bound to destroy the utility of the service for the purposes for which it was intended. Accordingly, in order to maintain and improve the usefulness of the Citizens Radio Service for its intended purposes, the Commission proposes to amend Part 19, Citizens Radio Service, by revising Subpart D, Station Operating Requirements, and making other substantial changes.

5. The proposed amendments are designed to make more apparent the permissible and prohibited communications and uses of citizens radio stations, both for the enlightenment of the licensees and to facilitate enforcement of the rules by the Commission.

6. Since the Citizens Radio Service was intended primarily as a radio service for radio communications between units of the same station; i.e. between units operated under the same call sign and since most of the abuse of station operating privileges has occurred during transmissions between Class D stations of different licensees, additional limitations are proposed to be placed on such transmissions. Thus, the proposed amendments would prohibit intercommunication between units of different stations on all except five of the twenty-three frequencies presently available to Class D stations. In addition, other restrictions, such as the specific time limitation on communications and the limitations on permissible types of communications, are proposed to be applicable only to intercommunication between units of stations of different licensees.

7. Because of the difficulty in generalizing or enumerating the great variety of possible desirable uses of citizens radio stations, the proposed rule amendments specifically prohibit certain practices and communications which the Commission believes to be undesirable including transmissions relating to the technical performance or capabilities of radio equipment.

8. Pending in the Commission's files are the following petitions: (RM-252) filed on April 11, 1961 by C. B. Horizons Magazine of Modesto, California; (RM-311) filed on February 27, 1962 by the Ozark Five Watters of Fayetteville, Arkansas; (RM-312) filed on February 19, 1962 by the 14W Association of Seattle, Washington; (RM-342) filed on June 14, 1962 by Nuna-maker Electronics and Communications, Inc. of Portsmouth, Ohio; and (RM-347) filed on June 11, 1962 by Mr. George L. Turk, Jr. of Houston, Texas. All of these petitions request modification, at least in part, of some of the portions of Part 19 which are under consideration in the

instant proceeding. Accordingly, to the extent that the above petitions request modification of Part 19 at variance with what is proposed herein, they will be considered in any disposition of this proceeding. Of course, such additional comments as may be submitted by the petitioners will also be considered.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple
Acting Secretary

Adopted: November 14, 1962

Released: November 16, 1962

APPENDIX

Proposed Amendments to Part 19, Citizens Radio Service

1. Section 19.2 is amended by revising the definitions in paragraph (b) for Class A, B, C, and D stations, and by adding a new definition in alphabetical order in paragraph (c), as follows:

§19.2 Definitions.

(b)

Class D. station. A mobile station in the Citizens Radio Service operating on an authorized frequency in the 26.96-27.23 Mc/s frequency band, or on the frequency 27.255 Mc/s, with an authorized input power of 5 watts or less for radiotelephony only.

(c)

Person. The term "person" includes an individual, partnership, association, joint-stock company, trust, or corporation.

2. Section 19.3(c) is amended to read as follows:

§19.3 Policy governing the assignment of frequencies.

(c) All applicants and licensees in this service shall cooperate in the selection and use of the frequencies assigned or authorized, in order to minimize interference and thereby obtain the most effective use of the authorized facilities.

3. A new §19.5 is added to read as follows:

§19.5 Types of operation authorized.

(b) Class B, Class C, and Class D stations are authorized as mobile stations only; however, they may be operated at fixed locations in accordance with other provisions of this part.

4. Section 19.12 is amended to read as follows:

§19.12 Eligibility for station license.

(a) Subject to the general restrictions of §19.4, any person, other than an unincorporated association in the case of a Class D station, is eligible to hold an authorization to operate a station in the Citizens Radio Service: **Provided**, That if the applicant for a Class A, Class B, or Class D station authorization is an individual or partnership, such individual or each partner is eighteen or more years of age.

Note: While the basis of eligibility in this service includes any state, territorial, or local governmental entity, or any organization or association operating by the authority of such governmental entity, including any duly authorized state, territorial, or local civil defense

organization, it should be noted that the frequencies available to stations in this service are shared without distinction between all licensees and that no protection can be afforded to the communications of any station in this service from interference which may be caused by the authorized operation of other licensed stations.

(b) Notwithstanding the provisions of paragraph (a) of this section, an unincorporated association may be authorized to operate a Class D station in this service upon a showing satisfactory to the Commission that the proposed radio operations are not feasible, or may not be as efficient or economical, when conducted under station licenses issued to the individual members. A station license shall not be issued to an unincorporated association solely to avoid the operating restrictions on intercommunications between units of stations licensed to different persons, contained elsewhere in this part. Unincorporated associations which hold Class D station licenses in this service as of (effective date of amendment) must make the showing required by this paragraph upon application for renewal and/or modification of license. An unincorporated association, when licensed under the provisions of this paragraph, may upon specific prior approval of the Commission provide radiocommunications for its members.

(c) No person shall hold more than one Class B, one Class C, and one Class D station license except upon a showing that the area of operation of each station is different and that the same radio equipment will not be operated under more than one license of the same class.

5. Section 19.22 is amended to read as follows:

§19.22 Partial Grant.

Where the Commission, without a hearing, grants an application in part, or with any privileges, terms, or conditions other than those requested, the action of the Commission shall be considered as a grant of such application unless the applicant shall, within 30 days from the date on which such grant is made, or from its effective date if a later date is specified, file with the Commission a written rejection of the grant as made. Upon receipt of such rejection, the Commission will vacate its original action upon the application and, if necessary, set the application for hearing.

6. Section 19.24 is amended to read as follows:

§19.24 Changes in authorized stations.

Authority for certain changes in authorized stations must be obtained from the Commission before the changes are made, while other changes do not require prior Commission approval. The following paragraphs of this section describe the conditions under which prior Commission approval is or is not necessary.

(a) Proposed changes which will result in operation inconsistent with any of the terms of the current authorization require that an application for modification of license be submitted to the Commission. Application for modification shall be submitted in the same manner as an application for a new station, and the licensee shall forward his existing authorization to the Commission for cancellation immediately upon receipt of the superseding authorization.

(b) The operation of any station in this service shall be discontinued upon a change in the permanent mailing address of the station licensee unless, within 30 days before or after such change and prior to commencement of operation, notice of such change has been furnished the Engineer(s) in Charge of the Radio District(s) in which both the former and the new permanent mailing addresses are located and an application for modification of the station license has been filed with the Commission. Upon compliance with these conditions the station may be operated until a final determination has been made by the Commission with respect to such application for modification.

(c) Proposed changes which will not depart from any of the terms of the outstanding authorization for the station involved may be made without prior Commission approval. Included in such changes is the substitution of various makes of transmitting equipment at any station, provided that the particular equipment to be installed is included in the Commission's "Radio Equipment List, Part C" or, in the case of a Class C or Class D station using crystal control, the substitute equipment is crystal controlled; and further provided that substitute equipment employs the same type of emission and does not exceed the frequency tolerance and power limitations prescribed for the particular class of station involved.

COMMENTS

Per 19.12—Eligibility

The Commission notes here that no one licensee, regardless of his type of operation, shall be afforded any form of protection from interference from other licensees. This pertains to governmental agencies (usually local or municipal in scope) which have (in the past) asked for exclusive channel assignments in their area so as to be able to carry on police, fire, etc. business unhampered by interference.

Per 19.24 (b)—Changes

The Commission notes here that it will be possible to continue operation using your presently assigned call letters **provided** you give 30 days written notice to the FCC Engineer in charge of the districts where you will be operating (outside the terms of your license) and the FCC Engineer in charge of the district where your present license coverage area is restricted; **and**, provided you have filed with the Commission for a new license at your new address, including the returning of your present license.

7. In §19.25, the introductory text of paragraph (a) and paragraph (c) are amended to read as follows:

§19.25 Limitations an antenna structures.

(c) No Class B, Class C, or Class D station shall employ a transmitting antenna which does not comply with one of the following:

(1) The antenna shall not exceed 20 feet in height above ground level; or

(2) The antenna shall not exceed by more than 20 feet the height of any natural geological formation, tree, or manmade structure (other than an antenna supporting structure) on which it is mounted; or

(3) If mounted on the transmitting antenna structure of another authorized station, the antenna shall not exceed the height of that structure; or

(4) If mounted on an antenna structure used solely for receiving purposes, the antenna shall not exceed 20 feet in height above the ground level, geological formation, tree, or manmade structure upon which such receiving antenna structure is itself located.

8. Section 19.31 (d) is amended to read as follows:

§19.31 Frequencies available.

(d) The following frequencies are available for use by Class D mobile stations employing radiotelephony only, on a shared basis with other stations in the Citizens Radio Service, and subject to no protection from interference due to the operation of industrial, scientific, or medical devices on the frequency 27.125 Mc/s.

Mc/s	Mc/s	Mc/s	Mc/s
2/ 26.965	2/ 27.035	3/ 27.115	2/ 27.185
2/ 26.975	2/ 27.055	3/ 27.125	2/ 27.205
2/ 26.985	2/ 27.065	3/ 27.135	2/ 27.215
2/ 27.005	2/ 27.075	2/ 27.155	2/ 27.225
2/ 27.015	2/ 27.085	2/ 27.165	1/ 3/ 27.255
2/ 27.025	3/ 27.105	2/ 27.175	

1/ The frequency 27.255 Mc/s is shared with stations in other services.

2/ Except for official civil defense or emergency communications in accordance with §19.93 or §19.63, this frequency may be used only for intercommunication between units of the same station.

3/ This frequency may be used for intercommunication both between units of the same station and between units of different stations.

9. Section 19.32 is amended to read as follows:

§19.32 Station power.

The maximum power input to the plate or collector circuit or circuits which contribute radio frequency energy to the radiating system and the maximum radio frequency power supplied to the radiating system of a station operating in this service shall not exceed the following values:

Class of station	Maximum watts	
	Power input 2/	Power output
D	5	3.5

2/ For the purpose of this section, the input power measurement shall be made during maximum peaks of modulation using meters having a full scale accuracy of 2 percent or better and having a maximum time constant of not more than 0.25 of a second.

11. In §19.34, paragraph (d) is amended to read as follows:

§19.34 Types of Emission.

(d) Class D stations in this service are authorized to use amplitude voice modulation for radiotelephone communications only. However, the use of tone signals or signalling devices solely to actuate receiver circuits such as tone operated squelch or selective calling circuits, the primary function of which is to establish and maintain voice communications, is permitted. The use of tone signals solely to attract attention

COMMENTS

Per 19.25 (c) (4)—Antennas

Here the Commission notes that if your CB antenna is located on **any** receiving antenna tower (i.e. television), the CB antenna shall not be more than 20 feet above the **base** of the tower at the CB antenna's tallest point. At the present time CB antennas located on television (or other) receiving towers may be located as high on the receiving towers as desired, **provided** the tip of the CB antenna does not exceed the overall height of the existing receiving antenna or tower. CB antennas may still be mounted on **transmitting** antennas or towers [19.25 (c) (3)] if they do not **exceed** the top of the transmitting installation. This means CB antennas may be located below the top of Business Band antennas, amateur antennas, etc.

Per 19.31 (d)—Operating Frequencies

Those channels marked with a 3/ will be the **only** channels where communication between units of different licensees may be carried on.

This means that channels 12, 13, 14, 15 and 23 will probably become national calling and monitoring channels for vehicular traffic and mobile aid services. The remaining channels (18 in all) will be **reserved** for communication between units of the **same licensee**. The only exception to this rule is found in section 19.63 (b), concerning actual emergency or distress situations. Good-bye channels 9 and 11!

Per 19.32—Power

This is a **slight** change from the present '5 watts dc plate power input' standard as it assumes peak envelope power as the maximum power permissible, not average (a) un-modulated dc power input. This would seem to limit single sideband power levels to 5 watts peak envelope power. And, note that while the maximum input is to be 5.0 watts on maximum modulation peaks, the maximum power **output** has now been specified as 3.5 watts. This limits transmitter efficiency to 70 percent.

Per 19.34 (d)—Emission

In a word, "Q-Birds" or "Turkey Calls" are illegal.

or for the control of remote objects or devices is prohibited.

12. In §19.35(d)(3), the table is amended to read as follows:

§19.35 Emission limitations.

(3)

Maximum authorized power input to final radio frequency stage:	Attenuation (db)
Over 3 watts	50

13. Section 19.41 is amended to read as follows:

§19.41 Compliance with technical requirements.

(a) Upon detection or notification of a deviation from the technical requirements of the rules in this part, the radiations of the transmitter involved shall be suspended immediately, except for necessary tests and adjustments, and shall not be resumed until such deviation has been corrected.

(b) When any citizens radio station licensee receives an official notice of violation indicating that the station has been operating contrary to any of the provisions contained in Subpart C of this part, or where it otherwise appears that operation of a station in this service may not be in accordance with applicable technical standards, the Commission may require the licensee to conduct such tests as may be necessary to determine whether the equipment is capable of meeting these standards and to make such adjustments as may be necessary to assure compliance therewith. A licensee who is notified that he is required to conduct such tests and/or make adjustments must, within the time limit specified in the notice, report to the Commission the results thereof.

(c) All tests and adjustments which may be required in accordance with paragraph (b) of this section shall be made by, or under the immediate supervision of, a person holding a first or second-class commercial operator license, either radiotelephone or radiotelegraph as may be appropriate for the type of emission employed. In each case, the report which is submitted to the Commission shall be signed by the licensed commercial operator. Such report shall describe the results of the tests and adjustments, the test equipment and procedures used, and shall state the type, class, and serial number of the operator's license. A copy of this report shall be kept with the station records.

14. Subpart D (§§19.61-19.93) is revised to read as follows:

Subpart D—Station Operating Requirements.

- 19.61 Permissible communications.
- 19.62 Prohibited uses.
- 19.63 Emergency use.
- 19.64 Operation by, or on behalf of, persons other than the licensee.
- 19.65 Telephone answering services.

- 19.66 Duration of transmissions.
- 19.67 Tests and adjustments.
- 19.68 Station identification.
- 19.71 Operator's license requirements.
- 19.72 Posting station licenses and transmitter identification cards or plates.
- 19.73 Inspection of stations and station records.
- 19.74 Current copy of rules required.
- 19.75 Inspection and maintenance of tower marking and associated control equipment.
- 19.81 Answers to notices of violations.
- 19.82 Recording of tower light inspections.
- 19.83 False signals.
- 19.91 Station location.
- 19.92 Remote control and interconnection.
- 19.93 Civil defense communications.

Subpart D—Station Operating Requirements

§19.61 Permissible communications.

(a) The Citizens Radio Service is designed primarily for transmissions between units of the same station or, in the case of Class A stations, with other Class A stations of the licensee. Intercommunication between units of Class A, Class B, or Class D stations of different licensees is prohibited except for one or more of the following purposes and, in the case of Class D stations must utilize only the frequencies which are specifically available for intercommunication between units of different stations:

(1) Communications directly related to and necessary for the efficient conduct of the business or household of either or both of the licensees or to effectively control the movement of vessels, aircraft, vehicles, or persons.

(2) Communications directly related to and necessary for the performance of civic functions such as the activities of volunteer fire departments and auxiliary police, civil defense in accordance with §19.93, or in connection with public events such as parades or charity drives, provided that such communications shall be limited to the stations of licensees specifically requested or designated to participate therein by the official in charge of the function or activity.

(3) Emergency communications pursuant to §19.63.

(4) Communications from a unit, not operated at a fixed location, for the sole purpose of requesting routing directions, assistance to disabled vehicles or vessels, information concerning the availability of food or lodging, or any other assistance that might be necessary to a licensee in transit, and replies specifically responsive and confined to such requests.

(5) Upon specific prior Commission

approval shown on the respective licenses, necessary communications between citizen radio stations at fixed locations between which public telephone service is not installed.

Note: A licensee of a Class D station may operate a single unit for communications which are otherwise permitted under this part either to fulfill a one-way communications requirement to receiving units or for communication with units of other stations.

§19.62 Prohibited uses.

(a) A citizen's radio station may not be used:

(1) For any purpose, or in connection with any activity, which is contrary to federal, state, or local law.

(2) To carry communications for hire, whether the remuneration or benefit received is direct or indirect, including those cases where the communications are an incidental part of some other services or activity provided by the licensee for which he receives compensation or consideration from the other party, except as otherwise specifically provided in this part.

(3) For the transmission of communications containing obscene, indecent, or profane words, language, or meaning.

(4) For discussion, comment, or advocacy of social, religious, or political doctrines.

(5) To communicate with stations authorized or operated under the provisions of other parts of this chapter, with unlicensed stations, or with United States government or foreign stations.

(6) For any communication in the nature of a broadcast or announcement to any station that might be listening.

(7) To interfere maliciously with the communications of another station.

(8) For the direct transmission of any material to the public through public address systems or similar means.

(9) To transmit superfluous communications, i.e., any transmissions which are not necessary to properly engage in communications which are otherwise permissible.

(10) For the transmission of music, sound effects, or any other material intended solely for amusement or entertainment purposes.

(11) To transmit the word "MAY-DAY" or other international distress signals, except when a ship, aircraft, or other vehicle is threatened by grave and

imminent danger and requests immediate assistance.

(12) To carry program material of any kind for use either directly or indirectly in connection with broadcasting.

Note: A Class A, Class B, or Class D station may be used in connection with the administrative, engineering, or maintenance activities of a broadcasting station; a Class A, Class B or Class C station may be used for control functions by radio which do not involve the transmission of program material; or a Class A, Class B, or Class D station may be used in the gathering of news items or preparation of programs: **Provided**, That the actual transmissions of the citizen's radio station are not broadcast at any time in whole or in part.

(13) For transmitting communications to stations of other licensees which relate to the technical performance, capabilities, or testing of any transmitter or other radio equipment, including transmissions concerning the signal strength or frequency stability of a transmitter.

(14) For relaying messages, or transmitting communications, for a person other than the licensee, or members of his immediate family, except in the case of communications transmitted pursuant to §§19.61(a)(2), (4), and (5), 19.63(b), 19.64(e), and 19.93.

(15) For advertising, soliciting, or promoting the sale of any goods or services.

(16) For transmitting messages in codes, ciphers, or via speech scramblers or otherwise not in plain language except that nationally or internationally recognized operating signals and abbreviations may be used where the intent is not to obscure the meaning but only to facilitate communications.

(b) A Class D station may not com-

COMMENTS

Per 19.62 (a) (13)—Prohibited

This one is a dandy. The Commission states here that you cannot be on the air discussing the performance of your transceiver, antenna, noise clipper, voice compressor, etc., or exchanging S meter reports or checking for transmitter (or receiver) crystal frequency error. In other words, you **cannot** discuss your radio, your radio system, or its performance or anyone else's radio, radio system or its performance with any **other** station's units. You **may** have such discussions with units of your own license.

Per 19.62 (a) (16)—More—Prohibited

Voice scramblers are out. So are all codes, apparently, except for the 10-Code. Private codes (such as "10-A" [meaning **the boss is here, I can't talk**]) are outlawed.

Per 19.62 (b)—Prohibited

The FCC here establishes an absolute mileage **maximum** of 150 miles for communications. There is no room for interpretation of whether this is ground wave or skip. Simply "anything over 150 miles is clearly illegal."

COMMENTS

Per 19.61 (a) (1) (2) (3) (4)—Communications

These paragraphs help clarify such uses as parade control, dispatch communications for fund raising drives, dispatch communications for rural fire departments, etc. Paragraph (4) clarifies that a mobile unit in a strange territory may indeed use channels 12, 13, 14, 15, or 23 to obtain food, lodging or road direction information.

municate with, or attempt to communicate with, any unit of the same or other stations over a distance of more than 150 miles.

(c) A licensee of a citizens radio station who is engaged in the business of selling citizens radio transmitting equipment shall not allow a prospective customer to operate under his station license. In addition, all communications by the licensee for the purpose of demonstrating such equipment shall consist only of brief messages addressed to other units of the same station.

§19.63 Emergency use.

(a) All citizens radio stations shall give priority to the emergency communications of other stations which involve the immediate safety of life or health of individuals or the immediate protection of property.

(b) Any station in this service may be utilized during an emergency involving the immediate protection of life or health of individuals or the immediate protection of property for the transmission of any necessary emergency communications, without regard to the provisions of §§19.61 (a), 19.62 (a) (5) and (6), 19.64 (b), and 19.66 (d), subject to the following conditions:

(1) As soon as possible after the beginning of such emergency use, notice shall be sent to the Commission in Washington, D. C., and to the Engineer in Charge of the Radio District in which the station is located, stating the nature of the emergency and the use to which the station is being put.

(2) The emergency use of the station shall be discontinued as soon as possible, and the Commission in Washington, D. C. and the Engineer in Charge shall be notified immediately when such special use of the station is terminated. If the emergency use is of less than 24-hour duration, a single notice containing all of the required information will serve to comply with the notice requirements of this paragraph.

COMMENTS

Per 19.62 (c)—Prohibited

As a further effort to clamp down on the use of call letters of sellers of CB equipment by anyone **except** the seller and his staff, the Commission states that no prospective or actual customer may even operate a transceiver. Not even for demonstration purposes. When demonstration transmission are made, they are to be limited to "brief messages directed to a unit of the seller's license."

Per 19.63 (b)—Emergency Use

During an emergency situation (and only during a bonafide emergency) the rules and sections pertaining to communications limitations (i.e. length of transmissions, channels to use, etc.) are suspended. However, the Commission must be notified of such operation, in writing, as stated.

(3) The Commission may at any time order discontinuance of such special use of the authorized facilities.

§19.64 Operation by, or on behalf of, persons other than the licensee.

(a) All transmitters authorized in this service must at all times be under the control of the licensee. The licensee shall not transfer, assign, or dispose of, in any manner, directly or indirectly, the operating authority under his station license, and the licensee shall at all times have responsibility for the proper operation of all units of the station. Under no circumstances may a licensee permit another person to operate as a unit of his station pending application for, and receipt of, a citizens radio station license. No units of any station in this service shall be operated by a person other than the licensee, except as provided in §19.65 and the following paragraphs of this section.

(b) A citizens radio station may be operated by members of the licensee's immediate family living in the same household; by partners or members, if the licensee is a partnership or an unincorporated association and the communications relate to the activities of such partnership or association; or by employees of the licensee only while acting within the scope of their employment or, with the licensee's permission, for emergency or civil defense communications pursuant to §§19.63 and 19.93.

(c) Upon specific prior Commission approval shown on or attached to the station license, a licensee of a station in this service may permit persons other than those enumerated in paragraph (b) of this section to operate a unit of his station. The request for such approval may be made either at the time of filing an application for the station license or by letter at any time thereafter. Such request must show: (1) the nature of the proposed use and that it relates to an activity of the licensee; (2) how the licensee proposes to maintain control over the transmitters at all times; and (3) why it is not appropriate for such other person to obtain a station license in his own name. The authority, if granted, may be specific with respect to the names of the persons who are permitted to operate, or may authorize operation by unnamed persons for specific purposes. Such

COMMENTS

Per 19.64 (a) (b) (c)—General Use

In no uncertain terms, it is clearly illegal to allow anyone (even a close friend) to operate **any** of your units, or to operate under your call sign. Even members of your own family, who do not live under your own 'roof' cannot operate your units or under your call sign. If you are in business your employees cannot operate under your call sign or operate your units unless they are on official business.

authority may be revoked by the Commission, in its discretion, at any time.

(d) When a citizens radio station license of any individual has been revoked by the Commission, that individual shall not be permitted to operate any unit of a citizens radio station of another person until such time as he has again been issued a valid station license in this service by the Commission.

(e) Upon specific approval by the Commission, a citizens radio station may be operated by, or on behalf of, persons other than those indicated in the preceding paragraphs of this section. Requests by the licensee for such approval must show that the proposed use complies in full with the provisions of one of the subparagraphs of this paragraph and that the licensee has full access to and exclusive control over the radio equipment operated under the authority of the license held by him. In each case where compensation or remuneration is authorized to be received by the licensee, the applicable contract and records which reflect the cost of the service and its non-profit, cost-sharing basis shall be maintained by the licensee. The situations under which such additional authority may be granted are as follows:

(1) The licensee is a corporation and proposes to provide private radiocommunication facilities for the transmission of messages or signals by, or on behalf of, its parent corporation, another subsidiary of the same parent corporation, or its own subsidiary. Any remuneration or compensation received by the licensee for the use of the radiocommunication facilities shall be governed by a contract entered into by the parties concerned, and the total of such compensation shall not exceed the cost of providing the facilities.

§19.65 Telephone answering services.

(a) Notwithstanding the provisions of §19.64(a) and (b), a licensee may install a transmitting unit of his station on the premises of a telephone answering service or someone performing a similar service for the licensee. The same unit may not be authorized to more than one licensee. In all cases, the licensee must enter into a written agreement with the answering or similar service. This agreement must be kept with the licensee's station records and must provide, as a minimum, that:

(1) The licensee will have control over the operation of the radio unit at all times;

(2) The licensee will have full and unrestricted access to the transmitter to enable him to carry out his responsibilities under his license;

(3) Both parties understand that the licensee is fully responsible for the proper operation of the citizens radio station; and

(4) The unit so furnished shall be used only for the transmission of the

licensee's communications to other units belonging to the licensee.

(b) A citizens radio station licensed to a telephone answering service, or similar organization, shall not be used to relay messages or transmit signals to its customers.

§19.66 Duration of transmissions.

(a) All communications or signals, regardless of their nature, shall be restricted to the minimum practicable transmission time. The radiation of energy shall be limited to transmissions modulated or keyed for actual permissible communications, tests, or control signals.

(b) The transmission of audible tone signals for the operation of the tone operated squelch or selective calling circuits in accordance with §19.34 shall be limited to the minimum practicable time necessary to accomplish the desired actuation of the squelch or selective calling circuit and in no event shall such tone or sequence of tones exceed a total of 5 seconds duration.

(d) Except in the case of intercommunication between units of the same station, the transmission of any Class D station or any exchange of communications between two or more such stations

COMMENTS

Per 19.65—Telephone Answering Services

Unless this has slipped by us before, this would seem to be a **new** area of interest for CB radio sales and service centers. According to this section, it will now be possible to establish a telephone answering service, selling or leasing CB units to all telephone answering service customers, and then using CB radio to call and alert the answering service customers to the fact that they have a message (and relaying that message). **However**, each answering service customer must actually own (or be lease-purchasing) a unit, and that unit **must** be the one actually used to call the customer. And, the customer must have unlimited access to the radio, must have full control over the radio, and the 'customer' must have full knowledge that he alone is responsible for the operation of his unit under his call sign. A CRS license granted to the actual company running the answering service may **not** be used to relay messages or transmit signals to the customers.

Per 19.66 (d)—Duration

This is a major change. Under the present rules it is illegal to talk for periods greater than 5 minutes when communicating with units of different licensees. However, this time limit is **now** changed to 3 minutes of consecutive transmission. A silent period of 5 minutes will then be observed before any further transmissions are made to units of other licensees. The final sentence means that if by some quirk you are allowed to operate two or more CRS units under two or more call signs, you still must take a 5 minute break and keep transmission sequences to 3 minutes. You cannot carry on after 3 minutes by merely switching call signs and transceivers.



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AC POWER SUPPLY—CBP-1

Styled as matching pedestal for CB-5. Operates on 117V, AC power supply.



PORTABLE PAK—CBB-1

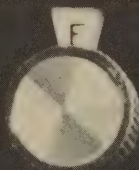
12V nickel cadmium rechargeable batteries. Battery life up to 8 hours before recharging with self-contained charger. Flexible, continuously-loaded fiber glass whip.

TONE-CODED SQUELCH—CBT-1

Full duplex, four transistors. Installs inside CB-5 cabinet—no soldering. Fully automatic.

CB-5 Citizens Band Transceiver

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CHANNEL



SQUELCH

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Let's start with size. 10¼" x 8¼" x 3¼". You can install it in the glove compartment of a Volkswagen and still have room for gloves.

You can operate it all day with less battery drain than it takes to start your engine **once**. (You can start the engine with the CB-5 "on", too — no vibrator.)

Performance? If you like figures, try these for size:

5 watts in; 100% modulation capability; 1 uv sensitivity for 10 db. S/N ratio; 45 db. adj. channel rej.; 6.0 kc. selectivity @ 6 db.; 300-3,000 c.p.s. audio @ 3 db.; 18 transistors, 9 diodes, 3 instant-heating transmit tubes for complete reliability and 100% modulation. In short — superior.

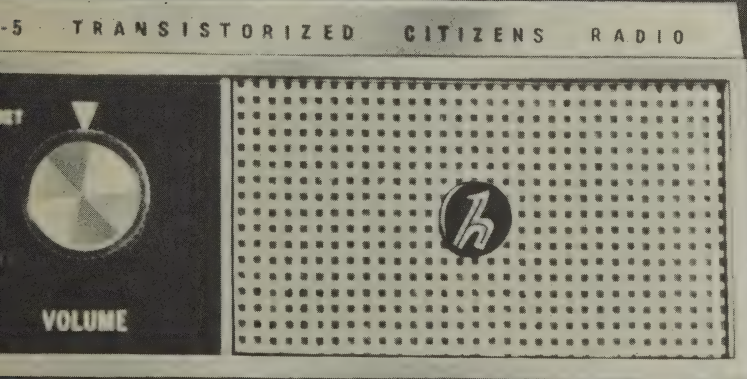
Convenience? Six crystal-controlled channels (same mil. spec. CR23/U crystals used in all Hallicrafters CB equipment). PTT ceramic mike. Less than seven pounds light (it's aluminum). Self-contained PM speaker. Electronic squelch.

If you think the CB-5 has possibilities — wait until you read about the accessories.

For illustrated brochure with complete specifications, visit your Citizens Band dealer or write Dept. 8-A, Hallicrafters, 5th & Kostner Aves., Chicago 24, Ill.

transistorized CB transceiver

\$199⁹⁵ accessories optional extra



shall not exceed 3 consecutive minutes. At the conclusion of this 3-minute period, or upon termination of the exchange if less than 3 minutes, the station transmitting, or the stations participating in the exchange, shall remain silent for a period of at least 5 minutes and monitor the frequency or frequencies involved before any further transmissions are made. However, for the limited purpose of acknowledging receipt of a call, such a station or stations may answer a calling station and request that it stand by for the duration of the silent period. The time limitations contained in this paragraph shall apply to all the transmissions of an operator who, under other provisions of this part, may operate a unit of more than one citizens radio station.

§19.67 Tests and adjustments.

All tests or adjustments of citizens radio transmitting equipment involving an external connection to the radio frequency output circuit shall be made using a non-radiating dummy antenna. However, a brief test signal, either with or without modulation, as appropriate, may be transmitted when it is necessary to adjust a transmitter to an antenna for a new station installation or for an existing installation involving a change of antenna or change of transmitters, or when necessary for the detection, measurement, and suppression of harmonic or other spurious radiation. Test transmissions using a radiating antenna shall not exceed a total of 1 minute during any 5-minute period, shall not interfere with communications already in progress on the operating frequency, and shall be properly identified as required by §19.68, but may otherwise be unmodulated as appropriate.

§19.68 Station identification.

(a) The serial number appearing on each citizens radio station license shall be the call sign assigned to such station.

(b) Each required transmission of the station call sign shall be made in the English language by the operator of each unit, shall be complete, and each letter

and number shall be separately and distinctly transmitted. Only standard phonetic alphabets, nationally or internationally recognized, may be used for clarity in lieu of pronunciation of letters for voice transmissions of call signs. Each required voice transmission of call sign shall be preceded by "from" or by "this is". Any unit designator or special identification may be used in addition to the required use of the station call sign but not as a substitute therefor.

(c) The call sign of a citizens radio station shall be transmitted, in accordance with paragraph (b) of this section, at the beginning and at the end of all transmissions, or in the case of an exchange of transmissions, at the beginning and at the end of such exchange: **Provided**, That where transmissions or exchanges of greater length are permitted by this part, the call sign of a citizens radio station shall also be transmitted at least once every 3 minutes.

(d) Except for communications pursuant to §§19.61(a)(4), 19.63, and 19.67, all voice communications of any Class D station must be directed to specific persons or stations. In order to comply with this requirement, any Class D station directing a transmission to a unit of another station or stations must identify all stations being called, either by transmission of the complete assigned call sign, or if not known, must identify the station being called by the licensee's first and last name or trade name. In those cases where the station being called is identified only by name, the formerly unknown call sign of that station shall be transmitted by the station initiating the exchange at the termination thereof. If the transmission is intended for several or more members of an organized group, such as a volunteer fire department or civil defense group, it may be directed to the group by name.

§19.71 Operator's license requirements.

(a) Except for stations using manually operated telegraphy transmitting by any type of the Morse Code, no operator license is required for the operation of a citizens radio station during the course of normal rendition of service.

(d) Except as provided in §19.41, no commercial radio operator license is required to be held by the person performing transmitter adjustments or tests during or coincident with the construction, installation, servicing, or maintenance of Class C or Class D stations in this service: **Provided**, That there is compliance with all of the following conditions:

(1) The transmitting equipment shall be crystal-controlled with a crystal capable of maintaining the station frequency within the prescribed tolerance;

(2) The transmitting equipment either shall have been factory-assembled or shall have been provided in kit form by a manufacturer who provided all com-

COMMENTS

Per 19.67—Tests

Here the Commission urges all testers to use dummy loads. When the tests being performed actually concern loading into and/or tuning an antenna, the duration of the test periods shall be limited to 1 minute in 5, and be maintained on channels where no other communications is in effect.

Per 19.68—Identification

Concurrent with section 19.66 (d) a unit must identify at the beginning and end of each transmission with the **full** call sign of both the station being worked and the call sign of the actual station doing the transmitting. This is further refined to include the wording "from" or "this is". Example—KEG2607, **this is** KEG2276, or, KEG2607 **from** KEG2276.

ponents together with full and detailed instructions for their assembly by non-factory personnel;

(3) The frequency determining elements of the transmitter, including the crystal(s) and all other components of the crystal oscillator circuit, shall have been pre-assembled by the manufacturer, pre-tuned to a specific available frequency, and sealed by the manufacturer so that replacement of any component or any adjustment which might cause off-frequency operation cannot be made without breaking such seal and thereby voiding the certification of the manufacturer required by this paragraph;

(4) The transmitting equipment shall have been so designed that none of the transmitter adjustments or tests normally performed during or coincident with the installation, servicing, or maintenance of the station, or during the normal rendition of the service of the station, or during the final assembly of kits or partially pre-assembled units, may reasonably be expected to result in off-frequency operation, excessive input power, over-modulation, or excessive harmonics or other spurious emissions; and

(5) The manufacturer of the transmitting equipment or of the kit from which the transmitting equipment is assembled shall have certified in writing to the purchaser of the equipment (and to the Commission upon request) that the equipment has been designed, manufactured, and furnished in accordance with the specifications contained in the foregoing subparagraphs of this paragraph. The manufacturer's certification concerning design and construction features of Class C or Class D station transmitting equipment, as required if the provisions of this paragraph are invoked, may be specific as to a particular unit of transmitting equipment or general as to a group or model of such equipment, and may be in any form adequate to assure the purchaser of the equipment or the Commission that the conditions described in this paragraph have been fulfilled.

(e) Any tests and adjustments necessary to correct any deviation of a transmitter of any Class of station in this service from the technical requirements of the rules in this part shall be made by, or under the immediate supervision of, a person holding a first or second-class commercial operator license, either radiotelephone or radiotelegraph, as may be appropriate for the type of emission employed.

§19.72 Posting station licenses and transmitter identification cards or plates.

(a) The current authorization for each station operated at a fixed location shall be posted at a conspicuous place at the principal fixed location from which such station is controlled, and a photo-

copy of such authorization shall be posted at all other fixed locations from which the station is controlled. In addition, an executed Transmitter Identification Card (FCC Form 452-C) or a plate of metal or other durable substance, legibly indicating the call sign and the licensee's name and address, shall be affixed, readily visible for inspection, to each transmitter operated at a fixed location when such transmitter is not in view of, or is not readily accessible to, the operator of at least one of the locations at which the station authorization or a photocopy thereof is required to be posted.

(b) The current authorization for each station operated as a mobile station shall be retained as a permanent part of the station records, but need not be posted. In addition, an executed Transmitter Identification Card (FCC Form 452-C) or a plate of metal or other durable substance, legibly indicating the call sign and the licensee's name and address, shall be affixed, readily visible for inspection, to each of such transmitters: **Provided**, That, if the transmitter is not in view of the location from which it is controlled, or is not readily accessible for inspection, then such card or plate shall be affixed to the control equipment at the transmitter operating position or posted adjacent thereto.

§19.73 Inspection of stations and station records.

All stations and records of stations in the Citizens Radio Service shall be made available for inspection upon the request of an authorized representative of the Commission made to the licensee or to his representative. Unless otherwise stated in this part, all required station records shall be maintained for a period of at least 1 year.

§19.74 Current copy of rules required.

Each licensee in this service shall maintain as a part of his station records a current copy of Part 19, Citizens Radio Service, of this chapter.

§19.83 False signals.

No person shall transmit false or deceptive signals or communications by radio, or identify the station he is using or operating by means of a call sign or

COMMENTS

Per 19.73—Inspection

Only section 19.41 records or their equivalent, and copies of any applications or reports to operate under special emergency or disaster circumstances need be filed by Class D operators.

Per 19.74—Current Rules

Until such time as these proposed rules or the final changes applying to these proposals are actually incorporated into Part 19, possession of the present and **current** Part 19 is required. Watch CB Horizons for notification as to when a completely new Part 19 will be required possession by each Class D licensee.

signal which has not been assigned by proper authority to that station, or refuse to properly identify himself and the radio station he is using or operating to any person when such identification is possible under the conditions of use or operation in effect at the time such identification is requested.

§19.91 Station location.

(c) A Class B, Class C, or Class D mobile station may be used or operated anywhere in the United States subject to the provisions of paragraph (d) of this section.

(d) A mobile station authorized in this service may be used or operated on any vessel, aircraft, or vehicle of the United States: **Provided**, That when such vessel, aircraft, or vehicle is outside the territorial limits of the United States, the station, its operation, and its operator shall be subject to the governing provisions of any treaty concerning telecommunications to which the United States is a party, and when within the territorial limits of any foreign country, the station shall be subject also to such laws and regulations of that country as may be applicable.

§19.92 Remote control and interconnection.

(b) A Class B, Class C or Class D station shall not be physically, inductively, capacitatively, or otherwise attached to, or connected with, public telephone toll or exchange facilities.

§19.93 Civil defense communications.

A licensee of a citizens radio station may use his licensed radio facilities, without regard to the provisions of footnote (2) of §19.31(d) and §§19.61(a), 19.62(a) (5) and (6), and 19.66(d), for the transmission of messages relating to civil defense activities in connection with official tests or drills conducted by, or actual emergencies proclaimed by, the civil defense agency having jurisdiction over the area in which the station is located: **Provided**, That:

(a) The operation of the radio station shall be on a voluntary basis.

(b) Such communications are conducted under the direction of civil defense authorities.

(c) Official tests or drills of the radio units only, not involving participation by some other division or branch of the civil defense organization for which radio messages are transmitted, shall be limited to a total on-the-air time not to exceed 1 hour per month for all the stations involved. Official tests or drills involving participation by one or more divisions or branches of the civil defense organization, in addition to the radio group, need not be included in the 1 hour per month time limitation.

(d) As soon as possible after the beginning of such use, the licensee shall send notice to the Commission in Washington, D. C. and to the Engineer in

Charge of the Radio District in which the station is located, stating his name, call sign, address, the nature of the communications being transmitted, and the duration of the special use of the station. In addition, the Engineer in Charge shall be notified as soon as possible of any change in the nature of or termination of such use.

(e) In the event such use is to be a series of pre-planned tests or drills of the same or similar nature which are scheduled in advance for specific times or at certain intervals of time, the licensee may send a single notice to the Commission in Washington, D. C. and to the Engineer in Charge of the Radio District in which the station is located, stating his name, call sign, address, the nature of the communications to be transmitted, the duration of each such test or drill, and the time scheduled for such use. Notice shall likewise be given in the event of any change in the nature of, or termination of, any such series of tests or drills.

(f) In lieu of the notice required by paragraphs (d) and (e) of this section, the civil defense agency conducting the tests or drills or proclaiming the emergency, may send single notices to the Commission in Washington, D. C. and the Engineer in Charge containing all of the information required with respect to each of the participating licensees.

(g) The Commission may, at any time, order the discontinuance of such special use of the authorized facilities.

COMMENTS

Per 19.92 (b)—Interconnection

Phone patches of any kind are illegal.

Per 19.93 (c)—Civil Defense Drills

For the first time the Commission has gotten specific about the use of Citizens Radio Service units as a part of an overall Civil Defense program. This paragraph stipulates that you may conduct CD Drills or tests as an affiliated club group for a total time of 1 hour per month. This includes not the individual transmitting time of each unit, but rather a **total** transmitting time of 1 hour for **all** units involved in the test, per month. All regulations governing use of only channels 12, 13, 14, 15 and 23, plus those sections covering the length of duration of transmissions, message content, etc., are **generously** suspended by the Commission for the one hour per month period. Also suspended are paragraphs 19.61 (a) (5) and 19.61 (a) (6) which control conversing with unlicensed or foreign stations, or broadcasting in the sense that the messages are not directed for two-way communications purposes to a single station or units. All such tests must be under the direction of civil defense authorities and reports on all such test periods must be mailed to the Commission in Washington and to the District Engineer in Charge of the district where the tests take place.

WEATHERPROOFING YOUR MOBILE

— Jim Kyle, CBH Tech Editor —

Winter is upon us—and for the CB mobile operator, this means winterizing of the mobile radio as well as the car!

If you've already gone through one winter without any special precautions, you may feel this to be unnecessary—and on the other hand you may have learned the hard way just what needs to be done.

And if this is the first winter for your mobile installation, you'll undoubtedly want to make sure that you never do find out the hard way. Read on!

Winterizing a CB mobile installation divides into two major categories—one involves weatherproofing the antenna installation, with special attention to those places where coax must pass through body panels, and the other deals with the added demands on the auto's electrical system made by the combination of radio use and winter driving.

A properly installed antenna system should need no winterizing. Unfortunately, the majority of CB antenna systems in use on mobiles do not measure up to the definition of "properly installed".

A "proper" installation includes weatherproofing of all coax connections, and sealing of every point at which the feedline passes through body panels or the like. Most of us skip both of these steps.

Weatherproofing of the coax connection at the antenna is best done by use of liquid insulating dope such as General Cement's "Corona Dope" sold at most wholesale TV-parts houses for hi-voltage insulation. This is a dark red liquid plastic, which remains semi-

flexible after it dries. Two to three coats provide excellent weatherproof insulation.

Another compound, less widely available, is "Skotchkote" put out by the Scotch-Tape people. This is a liquid version of their popular No. 33 insulating tape, and is used the same way.

Be especially careful to seal off against moisture any place where the shield braid of the coax is exposed. Moisture under the braid (between the braid and the car's body) will lead to erratic performance and can cause severe loss of power.

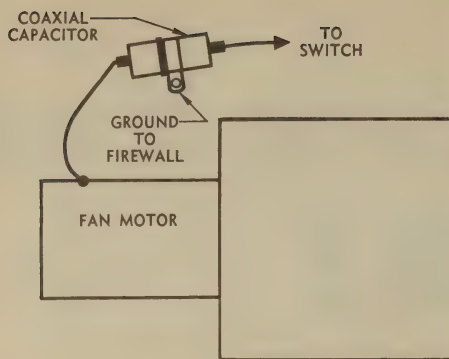
One of the best ways of sealing the points where coax passes through body panels is with use of "liquid rubber" which comes in a tube and is sold at most hardware stores. Clean the metal panels thoroughly, on both sides, right down to bare metal. Then build up a good-sized gob of the semi-plastic rubber and mold it into place, on both sides of the hole. It helps to anchor the coax on either side with cable clamps, so that it can't flex at the seal.

Other substances which can be used with possibly less success include caulking compound and epoxy-resin plastic.

Now to the electrical winterizing. This divides into two categories—additional de-noising to permit the mobile to operate, and beefing up of the car's electrical system to permit the car to keep functioning.

If your mobile unit was installed in the summertime, it's a safe bet that you overlooked *one* essential point when you chased out all noise sources. This point is the heater's fan motor!

Almost all blower motors used in



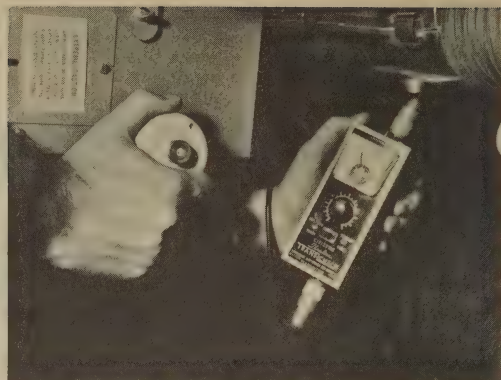
auto heaters are small, series-wound DC motors. And they spark badly at the brushes, almost without exception.

Result—when you turn on the heater, the radio erupts with a loud blast of static and nothing else.

Fortunately, this is usually simple to cure. Disconnect the wire from the motor just as close to the motor itself as you can conveniently get, and insert a coaxial capacitor (the same type used for most other automotive CB bypassing) in the line. Ground the shell of the capacitor securely to the firewall or frame with as short a lead as you can get. This should reduce the noise to a tolerable level if it doesn't kill it completely.

Now to the electrical system. Any driver is already aware that winter puts added loads on the car's electrical system. The radio simply adds to these loads—and sometimes the result is a dead battery.

The best insurance against this is to increase the capacity of the car's system, but this is an expensive route. The least expensive way of doing this is to replace the existing generator with an alternator, such as the new Motorola A-40. This unit sells for less than \$80, and is available from Lafayette Radio as well as through many auto service shops. It will increase the charging capacity of the system to 40 amps; this may not seem like much, but an alternator rated at 40 amps delivers 20 amps while the car is idling. The conventional generator actually draws current *out* of the battery while the engine idles and does not start to give appreciable charge until a speed of approximately 40 MPH is reached!



Checking antenna SWR is important if you haven't done so in several months. Loose connections and dirt which accumulates around connections can slowly deteriorate a system's performance resulting in shorter and shorter range. The a CESCO CB-52-T meter (see elsewhere this issue) does the job with a minimum of effort and time.

If you don't want to spend this much, the next best way is to invest \$10 or so in an inexpensive battery charger and connect it to the battery every night when you park the car. This will *at least* insure that you can start the next morning—but it won't keep the battery at full charge if most of your driving is slow-speed in-town-traffic variety.

Naturally, you'll want to check the level of the water in the battery every time you fill the tank. On cold, dry winter days the battery electrolyte tends to evaporate far more rapidly than in the muggy, humid summer-time—and a battery which is low on water *can't* accept full charge.

If your radio installation takes power from the accessory block under the dash, you'll find it helpful to run a length of No. 10 wire direct from the hot battery terminal to the CB unit. This eliminates voltage drop and wasted power, and will both give you a little greater range and a little better use of the battery power, winter or summer.

It's almost anti-climactic to warn that the CB unit should be turned OFF when starting on a cold morning, if the battery is the slightest bit weak. However, it's surprising how many operators forget that the radio draws considerable power!

Good luck—and happy wintertime CB operation!

MARK *Static Sheath**

***Eliminates Noisy Precipitation Static*...Improves Signal-to-Noise Ratio
Affords up to 20 db Operating Gain...Increases Receiver Sensitivity
Extends Intelligible Coverage. Easiest to install.***

INCREASE COVERAGE

MARK II SUPER BEACON FIXED STATION ANTENNA *with exclusive Static Sheath**

Design advantages of the new **MARK II** now make it possible to step up the efficiency of your CB operation, and maintain clearer communication over greater distances. 19 feet overall, the omnidirectional **MARK II** makes fullest use of the 20-foot legal length limit. Requires no radials or skirts. Provides 1 db gain over ground plane antennas. Employs a full half-wave radiator voltage fed through a special launcher-matcher cable section for excellent impedance match over the entire citizens band. Low angle radiation insures utmost efficiency and maximum contact with mobile units.

Improved mechanical features and extra-rugged base support pipe add to its reliability. Simplified clamp mounting makes installation easy.

Precipitation Static** is caused by charged particles in the air impinging in a continuous stream on metal antenna radiator surfaces. It is revealed by a continuous hissing background noise. The patented **Mark Static Sheath is a tough, durable, dielectric plastic covering that acts as an electrical insulator and eliminates static interference caused by the precipitation effect.

MARK HW HELIWHIP®* MOBILE and MARINE ANTENNAS *Top-Loaded, 50-Ohm Load... with Static Sheath**

Shortened mechanical structure and other Mark features bring new efficiency, new compactness, new convenience to CB communication. Molded Fiberglass, with Static Sheath.* Designed to replace lengthy stainless steel whips. Far superior to whip and loading-coil combinations. Can be located on upper portion of vehicle such as trunk lid, cowl, fender or hood to obtain proper ground plane. Single-hole mounting. 18", 3', 4' and 6' mobile models. **Heliwhip Marine Antenna** (6' long) eliminates need for metal ground plane.

**See Your B & K Distributor or
Write for Catalog HW19-CB**

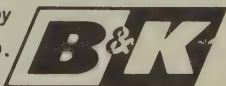
*U.S. Pat. 2,966,679
U.S. Process Pat. 2,938,210



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1801 W. Belle Plaine Chicago 13, Illinois

REPORT ON CITIZENS BAND TEST EQUIPMENT

— STAFF —

CESCO METERS

Continental Electronics and Sound Company (CESCO) has a series of three meters which perform a variety of functions for both the CB buff and the CB service shop. Few of us should be without at least one of these meters.

Perhaps the most useful, most economical and easiest to use of the three is the CB-52-T Transicheck meter. This meter will tell you (a) the approximate transmitter output (in watts, or a fraction thereof), (b) when you have a peak transmitter output, (c) when you have your transmitter, feedline and antenna matched (minimum standing waves), (d) when you have the greatest antenna field strength, as well as the directivity and radiation pattern of a beam antenna. The CB-52-T does all of this with a single control and a simple sliding switch.

CB-52-T is mounted *in* your antenna feedline with the coaxial SO-259 connector on the end of your antenna transmission line connecting in on a mating female connector on top of the meter. Next we run 12-15 inches of RG-58/U or RG-8/U cable from the transmitter output to the input on the meter, which is reached through a female coaxial connector on the base of the CB-52-T. This places the meter in the line between the transmitter and antenna. Sliding the two position (forward and reverse power) switch to the right we use the single knob control on the front to set the needle exactly at 100 on the scale. Next flip the slide switch to the left (to the reverse power position) and read off on the top scale where the needle points. The top scale is calibrated from 1 to 100. The position opposite the needle is the standing

wave ratio. Readings of 1, to 1.5, are good and very acceptable. A reading above 1.5 indicates we can *probably* improve our antenna system (mobile or base) by doing a little tuning or 'pruning.'

Once we have our antenna system perking, we slide the meter switch back to forward power and set the knob control to a red dot which appears at about 10 o'clock on the dial surrounding the knob. Then we key the transmitter and read directly on the bottom scale the power output of the transmitter we are checking. Most read in the 2.9 to 3.4 area. This is the actual power output *in watts* of the transmitter under test.



CESCO's CB-52-T meter performs a number of functions including measuring SWR, antenna efficiency and field strength.

So much for our transmitter and standing wave ratio. Now perhaps we want to tune our beam antenna array. OK, so we stand the meter up against something (not a metal object however) where it won't move, slip the small banana jack provided into the coaxial socket on top of the meter and insert a 2 foot length of no. 12 or 14

THE ANTENNA IS HALF YOUR Communications System

You'll Enjoy an Extended,
Clear Operating Range with the
Mileage Maker, Jr.

Here's the antenna that offers an improved signal-to-noise ratio (as much as 20db) increasing operating gain and receiver sensitivity. The conductor is in the center of the 54" reinforced fiber glass rod for maximum protection and durability — center loading maximizes radiation resistance and efficiency. Visit your dealer, or write — today!

FG54CL	Mileage Maker, Jr.	\$15.85
FG102CL	Mileage Maker	18.95
LCF	Base loading coils for stainless whips	6.65



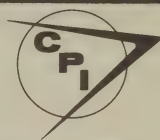
A TRANSMITTER



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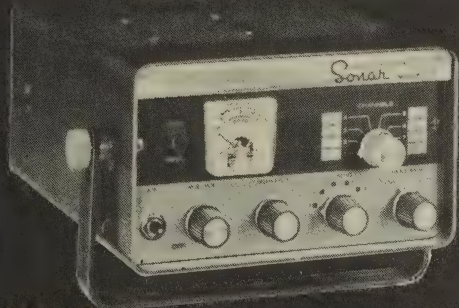


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bus wire into the banana jack. Turn the knob control full clockwise and key the transmitter with the beam pointing at the meter. Now set the meter on 100 using the knob control, and rotate the beam noting which direction it is pointing (relative to the meter) as we rotate the beam and record the meter readings. If the meter drops from 100 on the scale when the antenna is pointed directly at the meter to 10 on the scale (top scale now) when the beam is pointed 180 degrees, or directly away from the meter, we have a ratio of 10 to 1 of power off the front of the beam to power off the back of the beam. In terms of DB, this is approximately a 10 db front to back ratio. If the meter drops to 5 off the back, we have a 20 db front to back ratio (which a good 3 element beam should have).

The CB-52-T may be left in the line at all times . . . the amount of power lost going through the meter is not measurable. Chances are you won't leave it there, however, because you will find so many uses for it around the shack and around town helping other less fortunates tune their rigs and antennas. Price is \$24.95 at CESCO dealers or direct from CESCO at 6151 Dayton Liberty Road, Dayton, Ohio.

THE HEATHKIT IO-12 OSCILLOSCOPE

Time was when an oscilloscope was considered an exotic item of laboratory equipment and you never saw one in any kind of service shop.

But that was before the days of TV and hi-fi. Now, due to the demand created by these electronic marvels, 'scopes are readily available and the expense is not too great to allow you to use this all-purpose device to check your CB unit.

A word of caution—the price range is from \$50 up on a scope, so it's *not* recommended for the occasional do-it-yourselfer. If you do any service work, though, or if you have any other interests in electronics, a 'scope is one of the best investments you can make.

Primarily, this is what it does: It makes the signal visible. The major feature of a 'scope is the 'scope tube (in the IO-12, a five-inch one). When the instrument is turned on and warms

up, a narrow green line appears horizontally across the screen.

If you apply an AC voltage to the VERT. INPUT jacks and set the horizontal-sweep controls properly (how to do this is covered in the instruction book), the waveshape of the AC voltage appears on the screen.

While this sounds simple enough, it proves extremely helpful in practice. For instance, by feeding a 1000-cycle audio signal into an amplifier and comparing the shape of the wave at the input and at the output, you can immediately tell if distortion is present because the output will not look just like the input. More than this, you can make adjustments *while watching the wave* to get rid of the distortion.

One of the most useful features of the scope in radio work is in checking modulation level. By connecting the RF output from the transmitter to the vertical plates (the IO-12 has a removable panel in the rear to permit such connection—do not use the VERT. INPUT for this since the vertical amplifiers will not pass RF) and the audio output from the modulator to the HOR. INPUT jacks, a triangle-shaped pattern can be made to appear on the screen.

If modulation percentage is exactly 100 percent, the pattern will be a true triangle. Overmodulation will put a straight "tail" on the point of the triangle while less than 100 percent modulation will result in the triangle failing to come to a complete point.

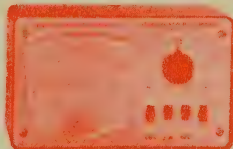
In addition to measuring percentage of modulation, this test will reveal distortion in the modulator. If everything is working right, the sides of the triangle will be perfectly straight. Any curvature of the sides indicates distortion. If the sides bulge outward, the problem probably lies in the RF amplifier stage, while if they curve inward, the problem is more likely to be in the modulator itself—but these indications are only starting points and are not necessarily accurate.

To the uninitiated, the front panel of the IO-12 scope looks about as imposing as the cockpit of a jet bomber. No less than 12 knobs and five input jacks grace it. However, with a bit of prac-

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Drawing void in any locality or State where prohibited by law. Federal, State and Local Government regulations apply.

Prize winner will be selected in a random drawing conducted by Stanley R. Rader, Certified Public Accountant. Its decision, with respect to all phases of the drawing, will be final.

Entries limited to residents 18 years of age and older, of the United States and Puerto Rico. Employees and their families, of General Radiotelephone, General Dealers, Stanley R. Rader, Certified Public Accountant, and General Radiotelephone Company's Advertising Agency are not eligible.

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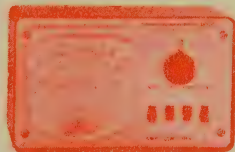
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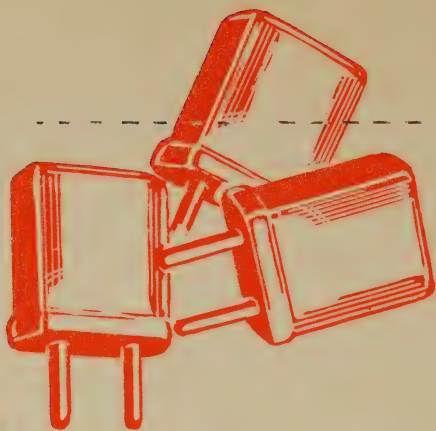
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tice its use becomes simple. Seven of the 12 knobs are hardly ever used, once set up (they are INTEN., FOCUS, VERT. POS., HOR. POS., PHASE, EXT. SYNC. AMP., and SYNC. SELECTOR). Of the other five, two control "vertical gain" or the height of the trace on the screen, while the other three have to do with the "sweep" circuits which move the beam back and forth across the tube face to make the trace.

The IO-12 is available either in factory-wired form or as a kit. Unless you've worked with scopes before, it's best to buy it already wired—since the mechanical assembly of a scope can prove a bit confusing in spite of the highly-informative Heathkit assembly book.

As we said before, this is *not* an instrument for the occasional do-it-yourselfer. However, if you feel that you have any need at all for a scope, the IO-12 will go a long way toward filling that need.

THE LAFAYETTE TE-44 CAPACITOR CHECKER

One of the most baffling causes of equipment failure is a dead capacitor. A shorted capacitor can cause either total failure of the gear, distorted audio, off-frequency operation—or possibly even show no direct effect but result in increased power consumption.

An open capacitor can also cause all these effects, plus more.

And since a capacitor behaves differently for AC and DC, testing one with an ohmmeter frequently fails to locate the bad ones.

In the old days, the only way to test capacitors was by substitution—taking the old one out and trying a new one in its place. This was both time-consuming and expensive.

But now, a number of gadgets are available which can test capacitors *in the circuit* and will tell you instantly if one is open or shorted. The Lafayette TE-44 is one of these devices.

In essence, the TE-44 is simply an RF oscillator. The "magic eye" tube on its face is an indicator of its RF output. The output of the oscillator is connected—through a special phasing net-

work—to the test cable.

That special phasing network, together with the test cable, makes up a "quarter-wave line" from the oscillator to the end of the cable. One of the characteristics of a "quarter-wave line" is that it transforms short-circuit into open circuits and vice versa. Thus, a shorted capacitor at the test end of the cable will make the oscillator believe that the cable is disconnected; an open capacitor at the test end will short-circuit the output of the oscillator.

Since a capacitor is a short circuit to RF, the device would not be able to tell the difference between a shorted capacitor and a good one—except for another set of circuits inside which also apply 6-volt 60-cycle AC from the filament line to the capacitor being tested. If the capacitor is good, this voltage appears across the capacitor. If it is shorted, no voltage appears.

The magic-eye tube is fed voltages from two sources; one input is from the oscillator and the other is from the 60-cycle across the capacitor. If *either* voltage is present, the eye tube closes. If both disappear, the eye opens.

A shorted capacitor causes the eye to open because the 60-cycle voltage disappears. An open capacitor causes the eye to open because the RF voltage is shorted out. But a good capacitor causes the eye to close.

Testing for opens and shorts is done separately, by a front-panel switch. To use the TE-44, plug it in to the power line and connect the test cable to the suspected capacitor. Place the OPEN-SHORT switch in OPEN position. Turn the TE-44 on. After the eye tube glows green, place the TEST switch in TEST position. If the eye closes, the capacitor is not open. Then move the OPEN-SHORT switch to SHORT position. If the eye remains closed, the capacitor is good.

GLOBE OPTIMIZER

The casual CB'er has a problem when it comes to test equipment. He doesn't want to invest too much money in a piece of test gear, and yet at the same time he does want to be able to ascertain that his system and its individual

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.050 pins. (Add 15¢ per crystal for .093
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All 23 megacycle frequencies in stock: 26.965, 26.975, 26.985, 27.005, 27.015, 27.025, 27.035, 27.055, 27.065, 27.075, 27.085, 27.105, 27.115, 27.125, 27.135, 27.155, 27.165, 27.175, 27.185, 27.205, 27.215, 27.255.

Matched crystal sets for ALL CB units (Specify equipment make and model numbers) \$5.90 per set

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In stock for immediate delivery (frequencies listed in megacycles): tolerance .005%. 1/2" pin spacing. .050 pin diameter. (.093 pins available, add 15¢ per crystal.) Specify frequency desired.

26.995, 27.045, 27.095, 27.145,

27.195, 27.255.

(add 5¢ per crystal for postage-handling)

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ENGINEERING SAMPLES and small quantities for prototypes now made at either Chicago or Fort Myers plants with 24 hour service. IN CHICAGO, PHONE GLadstone 3-3555

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component parts are functioning properly.

One of the most reasonable answers to this problem that we have found is the *Globe Electronics* (400 S. Wyman, Rockford, Illinois) Signal Optimizer.

The Optimizer has suggested a net price of \$47.50. Yet it contains within its compact (8 1/8 inches wide, 5 inches high by 1 7/8 inches deep) case just about everything you need to keep tabs on everything from crystals to modulation.

(1) *Watt-meter* — The Optimizer takes a direct coaxial feed from the transmitter and reads off from 0-10 the power output (and meter input) in actual watts. Relative power output up to 1,000 watts can also be determined, should you have need for such measurements.

(2) *Field Strength Meter*—Zip up the telescoping antenna and flip the function switch to 'Signal'. Adjust the meter to a reference position on the meter face and proceed to tune your mobile or base antenna following general procedures. The field strength meter will tell you when you have peak radiation efficiency from the antenna.

(3) *VSWR Indicator*—Set the switch in the 'Forward' position and run your transceiver output through a short length of coaxial patch cord to the transmitter coax input connector. Connect the coax from the antenna to the 'Antenna' output connector on the Optimizer. Key the transmitter and using the meter set knob adjust the needle to the marked position on the far right of the meter. Now un-key the transmitter and flip the switch left to 'Reverse' power. Key the transmitter again and read out the standing wave ratio on the bottom scale of the meter.

The unit has a chromed carrying handle and is exceedingly light in weight (under 2 pounds), as well as handy to tuck away in your glove compartment.

This Special Issue Printed Early

Because of the tremendous importance associated with the proposed changes in Part 19 of the Federal Communications Commissions rules and regulations, CB Horizons has been literally rushed to the presses and onto the newstands this month. Because of the need to get these proposed changes before the users of Part 19 radio with the utmost speed, many of the regular features (and a number of special features) have been omitted.

We urge that you act as you see fit on the Part 19 proposals with haste. But act fast, and with as much careful thinking as possible in the limited time available.

And, remember please, that it was CB Horizons that brought you this material at the earliest possible date with the greatest possible accuracy and completeness.

We'll see you next month (around January 10th) with our usual fine array of special reports and features.

Bob Cooper, Jr.
Publisher, KEG2607

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RF Output - 3.5 watts minimum

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No matter what you have, you can still upgrade to

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FILING COMMENTS

If you want to file comments with the Federal Communications Commission regarding the proposed rules changes in Part 19—or any other matter—you'll want to do it the *right* way. Otherwise, the Commission won't be able to consider your comments and all the time will be wasted!

The FCC rulebook says only that an original and 14 copies of each comment must be filed; in practice, this means you ought to use a Mimeo, Ditto, or other duplicating process to be sure that all 15 copies are legible (15 Mimeo copies are acceptable despite the requirement for "an original"—they *don't* want the stencil too!).

Keep in mind that while the FCC must *consider* all comments, it is not bound to follow the majority wishes. This is not an election or a contest. On the other hand, the FCC is looking for outside opinion to either confirm its own plan or to offer reasonable alternatives.

Where do you send it? This is the simplest part: "Federal Communications Commission, Washington 25, D.C."

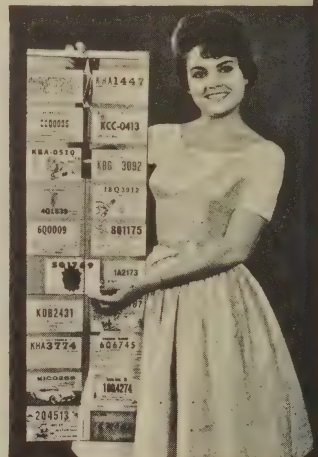
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WE TEST

★ KG-4000 KIT

It almost never fails, kit-building of radio equipment seems to hold a form of fascination much like golf or bowling. Maybe part of this feeling is due to keeping ones-self busy or more likely the reason is attributed to the challenge that a kit represents. Either way, whenever a kit is laid out on the kitchen table (if you have an understanding wife) a strange form of concentration will immediately engulf you.

Recently we received one of the new Knight-Kit KG-4000 transceivers. Upon unwrapping it and examining the parts, the kit building fever descended. Here was a unit, all transistorized, with what seemed to be a million parts. But this wasn't what held our interest. After a quick consultation with the schematic and the instruction manual we discovered that this was a real find. The unit itself has a full superhetrodyne receiver with as much packed in as you would find in any C-B equipment. A big plus factor was included in the receiver for it is complete with an R.F. amplifier stage. After this, our attention was focused on the transmitter. It certainly wasn't just a simple one. There was a separate oscillator stage and power amplifier. Oh, it all didn't stop here. We found an external battery jack, external antenna jack and headphone jack. Right up near the top of the chassis we found a small light bulb that momentarily puzzled us but the consternation turned to joy when it was discovered that this bulb was used to tune the transmitter and tell us if we had modulation.

Well, we couldn't wait any longer. With much haste and some study of the instruction manual the race was underway. Starting with some of the sub-assemblies, the various and sundry parts were quickly mounted and fastened down. So far everything fit very nicely. After a few of the pieces took

shape the instruction manual referred us to the main chassis and the big task.

The main chassis is quite a piece of workmanship and even more impressive when contemplating the placement of the many parts. The KG-4000 has an etched circuit board for the main chassis. First examination of it will convince you of the very sturdy



Allied Radio's KG-4000 Hand-Held Unit

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construction. A further examination will reveal the excellent markings on the surface of the board. This is really a help-mate when it comes to placement of all of the components. Installing and soldering-in the parts is when the fun begins. A very complete instruction manual and carefully marked parts proved that this part of the process was far easier than realized and before very long everything was securely in place. The rest of the unit was subsequently put together and all of it interconnected.

Like most constructors, one can hardly wait to "plug-in" the equipment and see if it works. We had the same feeling, so the batteries were installed in their holders and the unit turned on. A quick check of the instruction manual told us how to put it into operation. A few turns of various alignment screws and adjustments here and there and before we knew it, the Knight-Kit KG-4000 came alive. Pulling out the nice, heavily plated whip antenna brought us smack into the middle of a conversation going-on between a couple of local CB'ers. Quickly the squelch and volume controls were set for comfortable listening and when the channel was clear a call was made to one of the stations that had just been on. Almost before the push-to-talk button could be released by removing a finger, we got an answer. "How does this thing sound?" We asked. "Real good", came the reply.

Well, to make a long story short, several other contacts were made that evening.

PRICE CORRECTION

The December issue of CB Horizons carried a 1/2 page advertisement for the McCullough-Aero Corporation's new MAC-WHIP antenna for CB. In the advertisement the price was listed as \$17.50. However, in the coupon with the advertisement the price was quoted as \$9.95. The correct price should have read \$17.50 throughout the advertisement. CB Horizons accepts full responsibility for this error.

-CB- SHOWCASE

NEW CB PRODUCTS OF THE MONTH

Our first new product this month is a real surprise unit. **General Radiotelephone Company, 3501 W. Burbank Blvd., Burbank, California** has just released the specifications on a new 5 channel super-rugged unit which CB Horizons saw in action for the first time during the Labor Day weekend. The new unit, a 5 channel crystal controlled model, is dubbed the VS-2. Chief Engineer Charles Messenger advises us "Anticipating the gradual change from the Amateur type of CB operation to more commercial users in CB, I decided about six months ago that the time was coming when there would be a demand for a unit that would be rugged enough for use on jeeps, fork lifts and tractors—wherever maximum reliability was required."



Charlie's new unit is rated for what General calls 'VIBRATION SERVICE' (hence the VS-2). The unit is exceedingly small (4.5 inches high, 6.5 inches wide and 9 inches deep) and weighs in at 11 pounds. The power supply is transistorized drawing 3.4 amps on receive and 4.5 amps on transmit from 12 vdc. 117 vac operation is also provided. Everything is rated for vibration service throughout, including a weatherproof (moisture proof no less) carbon mike cartridge. An optional snap-rak has a weatherproof hood with a rubber suspension mounts for outdoor use on industrial vehicles.

The power transformer is the same unit found in General's new 60 watt FM Business Band rig, so you know there's lots of reserve reliability here!

The price of the new unit, including one pair of crystals, microphone with hanger and neo-

prene coil cord, and 117 vac power cord is \$139.95.

General isn't the only firm thinking about compactness these days. The folks at **Browning Laboratories, 100 Union Avenue, Laconia, New Hampshire** have their new 23 channel (!) mobile rig out now. And this one is really compact. The height is just 3 inches, the width is 8 inches and the depth is 9 inches. All 23 channels are available at a flick of a switch. The power supply is transistorized for greater reliability. The receiver is highly selective with 60 db of adjacent channel rejection. The modern styling is sure to match the interior of any new car. Browning has a list of accessories for the new unit including a transistorized S-Meter with illuminated dial, rear deck speaker kit and an AC power supply for home use.



You can get the full story on Browning's new M-523 unit by writing directly to the factory.

The **Hammarlund Manufacturing Company, 53 West 23rd Street, New York 10, New York** has officially uncovered their new 23 channel crystal controlled transceiver. The new CB-23, first shown in the July issue of CB Horizons after the May Chicago Parts Show, combines all of the many desirable features of a CB transceiver into a compact unit that operates from either 117 vac or 12 vdc.

Using a unique crystal synthesizer circuit, crystal control is achieved on all 23 channels. A 'fine tuning control' allows the user to adjust for off-channel signals plus or minus 3 kilocycles.



The receiver section is patterned after Hammarlund's communication receiver line including a double conversion circuit employing 262 kc i.f. amplifiers. This greatly improves the unit's

selectivity and cuts down on hash from strong signals on adjacent channels.

Price of the complete 23 channel station is \$229.50. This includes all crystals, built-in S-Meter, microphone, two sets of power cables and the built-in speaker. Full technical information is available from the manufacturer.

The Raytheon people have a new 10 channel CB transceiver specifically designed for Marine-mobile applications. The new RAYCOM II has 10 crystal controlled channels, automatic volume control, squelch circuit and panel lights to indicate when power is on and when the transmitter is operating. It is designed to operate from 117 vac or 12 vdc. The unit is available through franchised Raytheon Marine Dealers at a suggested price of \$220.00.

Lafayette Radio Electronics Corp., 111 Jericho Turnpike, Syosset, L. I., New York has scooped the low-cost CB industry again by introducing their new HE-90WX transceiver. This new unit is priced at only \$94.50, less mobile power supply (but ready to operate on 117 vac).

Lafayette advises their new unit is a deluxe transceiver with a full five input with six crystal controlled transmit-receive channels, plus, 23 channels on a tuneable receiver.

The superhet receiver has a Nuvistor r.f. stage for 1 microvolt sensitivity, and 3 i.f. stages. The squelch has adjustable sensitivity, and the receiver also features an automatic volume control, and automatic noise limiter. The unit as a whole features electronic push-to-talk switching. The transmitter matches any antenna load from 30-100 ohms, and features a built-in TVI filter. A

crystal spotting switch helps you find your transmitting channel on the tuneable receiver. The S-Meter reads received signal strength and direct RF power output. Each HE-90WX comes with matched crystals for channel 9 and a ceramic microphone. The accessory 12 volt mobile power supply sells for \$11.50.

C.B. Electronics Corporation, 13616 So. West-ern, Gardena, California has what must be the shortest CB mobile antenna on the market. Dubbed the 'Li' Bomb' by the manufacturers, the over all height of the base loaded mobile antenna is but 21 inches! The antenna base is available in two colors, red or black. Because of its short length, the manufacturer suggests that it can be mounted on the auto top for superior performance. The antenna is guaranteed un-conditionally against material and workmanship defects. Price is \$12.95 each, plus tax (if you live in California). We suggest you write the manufacturer for full details. They are looking for dealers and distributors too.

G.A.M. Electronics, 138 Lincoln Street, Man-chester, New Hampshire, has a new cleverly de-signed spring mount that just may solve some mobile problems for you. Actually, G.A.M. has two new springs. Constructed from stainless steel, these non-corrosive springs adapt to many existing antennas and mounts. One of the units has a standard base, the second has a ball-joint to allow the user to mount the unit on an angular surface. You can have the full details, including which antennas and mounts this adapts to by writing directly to the firm.



IT'S HERE!

THE McCULLOUGH-AERO

MAC-WHIP

The first basic improvement of both **receive** and **transmit** performance in mobile antennas—in years!

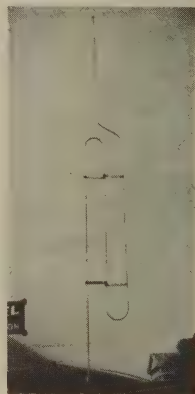
This is *not* just another antenna. This is a totally new, advanced concept in mobile antenna design. The McCullough-Aero MAC-WHIP actually provides receive as well as transmit gain in the mobile installation—where weak signal reception is the biggest single problem.

■ 12 feet of radiating material in a 6 foot whip ■ 2 loops ■ Screws into any standard $\frac{3}{8}$ "-24 thread mount ■ Tested and proven for months in Southern California by leading CB dealers, distributors and top mobile CB clubs. ■ The CB Mobile Gain Antenna that eliminates mobile trouble spots and shadow areas. Actually pushes the fringe area back, extending your coverage. ■ Will not bend back while your vehicle is in motion. Retains vertical polarization of your signal, producing greatly improved high speed mobile communications.

MAC-67 "GUT-R MOUNT"

Now! A completely Retractable CB antenna mount. Attaches at car roof level—with **NO HOLES IN YOUR CAR TOP!** Any std. $\frac{3}{8}$ -24 thread whip mounts in just seconds. An excellent mount for the magnificent MAC-WHIP! Order Both Today!

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Patent Pending

Only
\$17.50

McCULLOUGH-AERO CORP.

5615 Centinella Blvd. Culver City, Calif. Ph. EX 8-6293

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☐ Rush me GUT-R-MOUNT. \$9.95 enclosed.

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CB QSL CARDS. Samples free. PAUL, 7701 TISDALE, AUSTIN, TEXAS.

CB'ERS — SPEECH CLIPPER-KIT complete \$17.85. All new Dual Conversion Adapter kits now \$15.50, with tubes \$17.50 or \$5.00 deposit plus C.O.D. Hear only the channel you tune. Enjoy better selectivity, greater sensitivity. For HE-15, A, B 800, 910, B, etc. HE-20, A, B, C. Mark VII. 770, 1, 2. Messenger. GW-10 etc. Order exact model now! Free Literature Dept "H", BAINBRIDGE RADIO ELECTRONICS, 2839 BRIGGS AVE., NEW YORK 58, NEW YORK.

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CB QSL CARDS, 2 color, glossy, 100 for \$2.50. Samples dime. RAMSBOTTOM PRINTING, BOX 2378, KIRKSVILLE, MISSOURI.

STREAMLINE YOUR INTERNATIONAL EXECUTIVE 50 or 100 model. Install the new 23 channel switch, completely wired. Takes but five minutes to install. \$19.95 F.O.B. factory. See your dealer or place your order direct to C.B.S. ELECTRONICS, P.O. Box 110, Redwood City, California. Dealer inquiries invited

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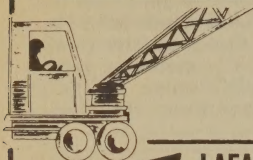
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HE-29B

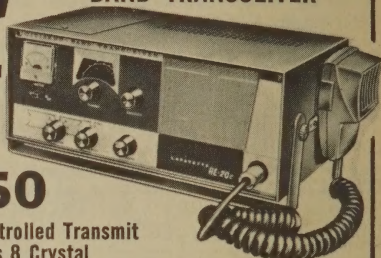
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HE-20C

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- 8 Crystal Controlled Transmit Positions plus 8 Crystal Controlled Receive Positions
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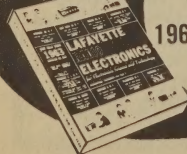
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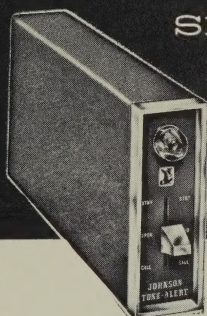
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"TONE ALERT"



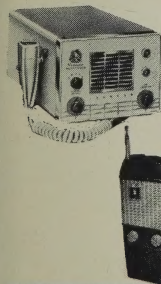
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- 10 channels at flip of a switch — illuminated indicator!
- Increased sensitivity, high adjacent channel rejection!
- New . . . high efficiency noise limiter circuit!
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Here's the new "Messenger Two" — with everything you've ever wanted in CB transceiver! Basic circuitry is patterned after the popular "Messenger". Highly efficient circuit design makes full use of maximum legal power . . . delivers a penetrating signal that "outperforms 'em all!" Looking for maximum receiver sensitivity? This unit is hot — pulls in signals you wouldn't know were around with less sensitive equipment . . . and adjacent channel rejection is tops! Tired of noisy receiver? New, noise limiter circuit in the "Messenger Two" lets you know what QUIET really means in a CB rig! Positive acting "squelch" and automatic volume control circuits — 10 channel coverage — push-to-talk microphone. Only 5 $\frac{1}{8}$ " x 7" x 11 $\frac{3}{8}$ ", easy to install anywhere.

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1 WATT AND 100 MILLIWATT "PERSONAL MESSENGERS"—Compact, 11 transistors and 4 diodes. Superhet receiver with exclusive tuned RF amplifier gives twice the sensitivity and 40% more range than similar units with conventional circuitry—more output than similar units with same rated inputs! Priced from \$109.50 NET

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The ultimate for any CB installation — designed for serious industrial, police and emergency use. Mutes speakers on your units until one calls another — then automatically your stations receive audio note and indicator light flashes "on", remaining lighted until call is answered. Eliminates annoyance of hearing "skip", electrical noise, or transmissions not meant for you!

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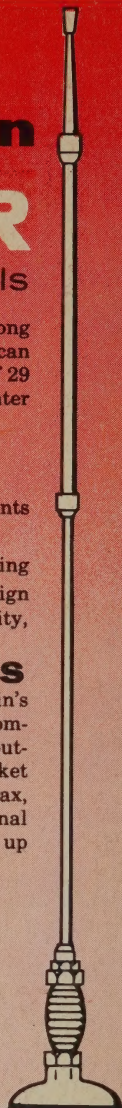
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